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POPULAR Computing WEEKLY

Only 40p.

29 November-5 December 1984

It's the best selling weekly

Vol 3 No 48

Coleco pulls out

COLECO — manufacturers of the Adam computer and the Colecovision video games machine — has pulled out of the UK market.

The news comes after continuing rumours that the company had abandoned its sales efforts for the Colecovision earlier this month (see *Popular Computing Weekly*, November 15).

The machines are manufac-

tured by CBS in the US, and marketed in this country by Ideal Toys. "CBS's involvement with Colecovision is not going to continue," said Philip Gibbs, director of marketing for electronics. "We are aware that a lot of consumers who already own a Colecovision will need software support, and within the next week we will be appointing a sales agency to handle that side of things."

"The product is still in the shops, being handled by one distributor, Hyde Park Clothing Company."

Hyde Park Clothing Company is reported to have taken delivery of 160,000 games cartridges and 40,000 consoles sold as remaindered stock. The company's manager, Mr Spiro, said, "We have bought the stock, but I will not divulge how many units. The figure of

QL network by Prism

A COMPUNET-style communications network and database is being planned for QL owners.

The QL network is being planned as a joint Sinclair/Prism venture. Prism, which already runs the Micronet 800 Prestel database, will be primarily responsible for developing and setting the new system up.

"Negotiations with Sinclair are still in their very early stages at the moment," explained Richard Hease, Prism's managing director. "We are planning something that will be for QL owners only, so it will be like Compunet in that sense. At the moment, we are looking at the different networks that could possibly run the system."

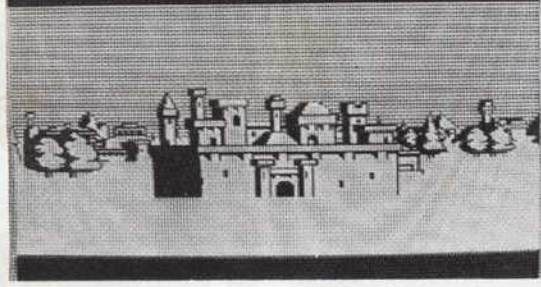
Prism will also be the exclusive distributors of a QL dedicated modem, manufactured by OE, and due for launch at the Which Computer? Show in January.

The OE modem will be available in three separate units. Q-con is the interface connecting with the QL's Serial 2 port. It can be purchased separately so that an alternative modem

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After Midnight — Doomdark

Tarithel the Fey stands at the Gate of Varennaur looking North to the City of Inniel. Three hours of the day remain.



THE SEQUEL to *Lords of Midnight*, *Doomdark's Revenge*, is now in the shops.

Morkin has been kidnapped by Shareth, Doomdark's daughter, and Luxor, Rorthron

and Tarithel the Fey must join forces to rescue him.

Available so far only for the Spectrum, *Doomdark's Revenge* costs £9.95.

Sinclair confirms portable

SINCLAIR has now confirmed that it is working on a new portable micro to be launched in 1985, (see *Popular Computing Weekly* November 8).

Main features of the portable machine include a single microdrive, flat screen display, and a price of around £300.

The design of this new machine is based on that of the Spectrum and it will be fully compatible with all current Spectrum software.

Entirely battery operated, the machine will use C-MOS Ram technology, which uses relatively little power, and is therefore ideally suited to the

continued on page 5

CHRISTMAS SOFT HITS

INSIDE

AMSTRAD DISC DRIVE REVIEW

THE BIG THREE

THREE ESSENTIAL PACKAGES CAN BE YOURS FOR WELL UNDER THREE FIGURES!



DATABASE

Micro Magpie for the Commodore 64 is probably the most advanced database management system available for any home micro. With Micro Magpie you can create a database system tailored exactly to your own information handling requirements.

With most database systems, you only get out what you put in. Micro Magpie gives you more! It can manipulate data between different files, perform calculations on numerical data, print out reports, and hardcopy data in graphical form. Only Micro Magpie can give you all these features...

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Micro Magpie would be excellent value if you bought it for the applications alone! You can have a highly sophisticated Mailing List system up and running within minutes, and you'll still be using only a fraction of Micro Magpie's potential! Once you start tailoring your own custom applications, you will begin to discover why Commodore User magazine called Micro Magpie "the software bargain of the year!"

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Micro Wordcraft is our new disk-based professional word processor. It is a direct descendant of the highly respected Wordcraft program, which is in use world-wide on the larger Commodore machines, Sirius, and IBM PC, etc. Written in 100% machine code, Micro Wordcraft spells affordable office quality word processing for the home or business user.

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- * Integral Centronics interface for parallel printer option.
- * Instantly accessible Help screens.
- * Comprehensive instruction manual included.

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Two machines in two weeks — the QL+ and the Spectrum Portable. If Sinclair carries on like this we'll be up to our knees in micros by the New Year.

What Sinclair is doing is actually very sensible. It has two basic design frameworks — one, an ultra-low-cost design based around the Z80 chip — the Spectrum. The other a more sophisticated concept using the 32-bit 68000 series of processors — the QL.

However much you want to spend Sinclair can offer an answer with machines priced at £130, £180, £400 and £800.

Yet before the Spectrum Portable is possible Sinclair has to make a fundamental decision about display type. With its flat-screen TV it has pinned its hopes on conventional TV technology — the cathode ray tube. Despite the considerable development effort expended to produce the flat tube, the result is disappointing. The black and white screen is very small, with only a narrow viewing angle and the picture tends to be unstable.

For the TV it is an acceptable compromise. For the Spectrum Portable it would be useless — imagine *Tasword* on a 40-column screen less than two inches wide. It just isn't on. Sinclair could certainly push to produce a bigger, better flat-screen tube, but, fundamentally, the conventional TV tube, whether it is cleverly bent so as to give the illusion of being flat or not, isn't the answer.

Anyone who has seen the Sanyo liquid crystal colour TV will realise that Sinclair must think again. A liquid crystal display is a digital technology; its picture is perfectly stable, and it consumes little power, making it ideal for a battery-operated device.

Not only that but six inch liquid crystal displays are now a commonplace option on many portable business micros.

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Presents...

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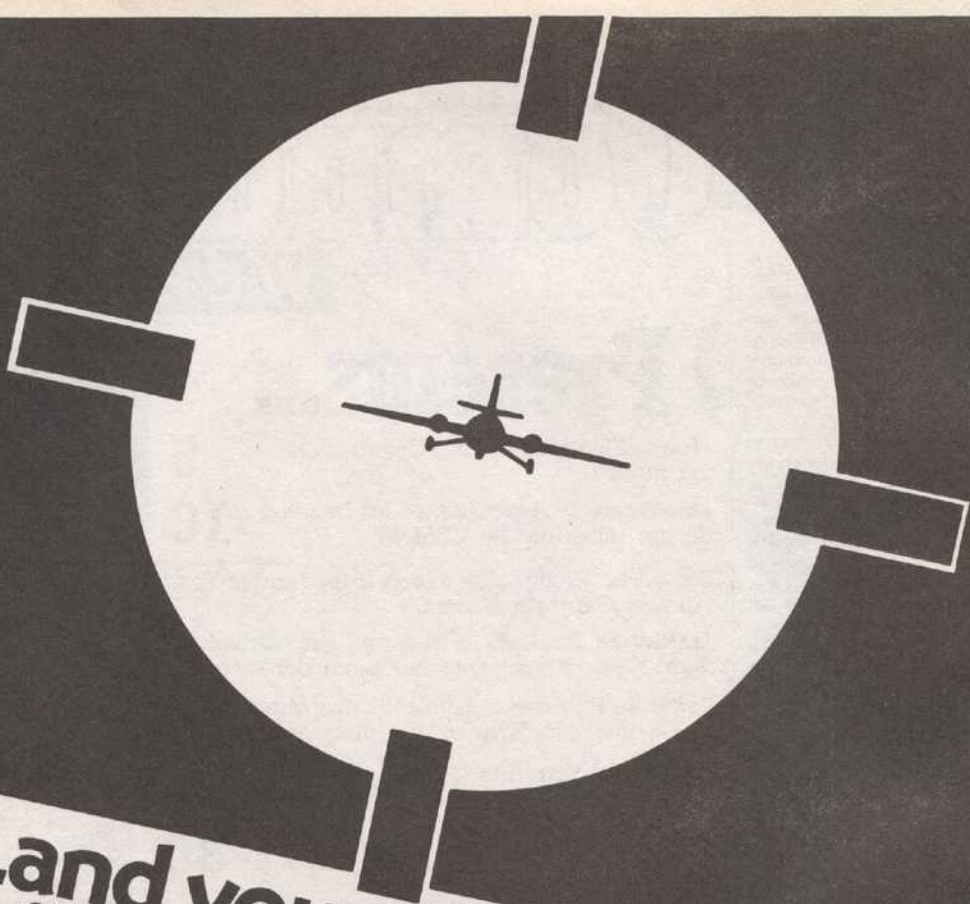
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Computer Trade Association Magazine of the Year



Land yourself a trip on a million pound computer.

In December's Your Computer there's a chance to win a trip on a million pound flight simulator.

There's a feature on advanced computer graphics that looks at Pioneer video discs and includes graphics routines for the ZX81, Spectrum, BBC, Dragon and Oric. Plus a review of the new Yamaha computer synthesizer. And lots, lots more.

December's Your Computer is out now. Fly down to your newsagent and get it.



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Parker pulls out

AMERICAN software company Parker Brothers has announced it is withdrawing from the software market in this country.

"The product planned for Britain for 1984-5 has been withdrawn," explained a Parker spokesman.

"However, I don't think this is a permanent withdrawal. Palitoy, which owns Parker Brothers, feels that the market is no longer viable. Still, if the market turns favourably, I think it will reconsider the decision

— perhaps at the 1986 Toy Fair.

Parker ran into problems because most of its software turnover came from titles for the Atari VCS machines. When Atari reduced its software prices down to £9.99, Parker continued to charge £29.99 and sales dropped.

"Our Spectrum and Commodore 64 releases were on cartridge and disc, respectively — again expensive products relying on high profit margins. The market share wasn't large enough." Parker has also suffered because Rom software for the Spectrum never took off and the penetration of disc units into the C64 user base is the UK is a fraction of the figure for the US.

Coleco

Continued from page 1

40,000 is quite wrong."

Another Ideal Toys' spokesman further commented, "The company is to concentrate less on electronic goods and more on a broad product range, such as CBS's Cabbage Patch Doll, and Child Guidance series of educational toys, which satisfy the needs of the market place."

After its launch, as the star of the 1983 summer Consumer Electronics Show, the 128K Adam computer system has been plagued by problems, first with late delivery and then with the reliability of its high-speed tape drive.

Its price was recently cut dramatically in the US, leading to speculation that it may be withdrawn from the American market after Christmas — rumours which CBS strenuously deny.

QL Network

Continued from page 1

can be used if desired. Q-con also contains the built-in software which provides the Prestel operating system. This software is also available separately on Microdrive.

Q-mod, the second part, is a V23 modem, operating at 1200/1200 baud (half duplex) and 1200/75 baud (full duplex).

Q-call, the third part, gives an auto-dial, auto-answer facility.

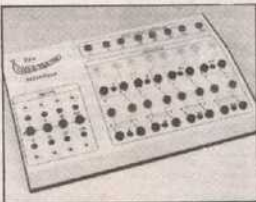
Prices for the units are Q-con: £79.95; Q-mod: £79.95; and Q-call: £39.95.

Details from OE, North Point, Gilwilly Industrial Estate, Penrith, Cumbria.

Express transfer to Quicksilva

TONY Crowther, successful C64 author or *Potty Pigeon*, *Suicide Express* and *Wanted: Monty Mole*, has signed up with Quicksilva to market his next two releases.

Tony left Gremlin Graphics a couple of months ago, and has spent the intervening time setting up and expanding Wizard Development, a BBC hardware and software company.



Spectrum portable

Continued from page 1

portable machine.

The flat-screen display for the portable is likely to be based on technology developed for the Sinclair flat-screen TV.

Continuing development work on the display will mean that the Spectrum Portable is unlikely to be launched before mid-1985.

Only one castle for Atari

ATARI Corporation (UK) has taken legal action against MRM Software over MRM's *Castle of Gems* game for the BBC.

Atari claims that *Castle of Gems* is a copy of *Crystal Castles*, an arcade game for

which Atari

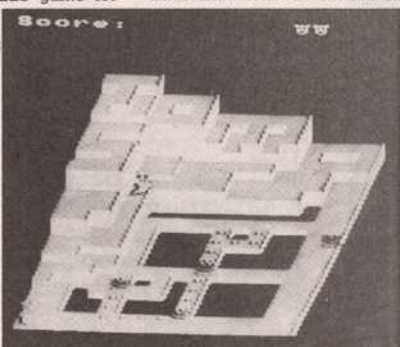
owns the rights

"The dispute with MRM was resolved out of court," said Jon Dean, Atari's UK product manager. MRM has undertaken not to advertise, sell, supply, or distribute any further copies of *Castle of Gems*.

"Our attention was first drawn to *Castle of Gems* in a computer magazine review which commented on the similarity between the two games," Jon continued. "When we saw the game ourselves, we counted 32 distinct similarities. Such similarities between games could include, for instance, the

colours used, the graphics, type of scrolling and so on.

"This action is only the first of several we intend to pursue fully. We hold the licence to a number of games, such as *Pacman*, *Donkey Kong*, and *Pole Position*, and it is not in Atari's interest to have unlicensed versions of these games on the market. There are a number of companies which do have unauthorised versions of



our games on release, and if necessary, we will take them to court."

Atarisoft's own conversion of *Crystal Castles* for the BBC is due to appear in December at £9.99.

The company is also planning to convert the game for the Atari 800XL early next year.

His two games to be marketed by Quicksilva are *Black Thunder* and *Gryphon*, both for the Commodore 64.

"*Black Thunder* is a revamped version of *Suicide Express* — I've done a lot of changes on-screen and altered the name. *Black Thunder* will be more of a 'finished' version than the original release," said Tony.

Black Thunder should be available in December, with *Gryphon* appearing just after Christmas. Both games are provisionally priced at £7.95.

BT bias for rights to Elite

THE rights to convert Acornsoft's highly successful title *Elite* for machines using the Z80 processor were up for auction last week and British Telecom's software arm, Firebird, gained the licence for 'a substantial sum'.

This gives Firebird the option to convert *Elite* to the Spectrum, Amstrad CPC 464, MSX and the long-awaited Enterprise computers, all of which use the Z80 processor.

"Firebird will definitely be producing a Spectrum version, and probably a CPC 464 version," said Jacqui Lyons of Marjacq Scripts, agents for *Elite*'s authors Ian Bell and David Braben.

When released, *Elite* will form part of Firebird's 'gold' premium range of software. Firebird has already released games in its 'silver' or budget-price series.

Elite on the Spectrum is expected to cost around £15, and is planned to be available in April-May 1985.

As yet there are no firm plans to produce versions for MSX.

**More news
on page 7**



PRESENT A NUMBER 1

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PRESS RELEASE

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New machines for Deus



Programmer Andy Stagg with one of Deus ex Machina's 'stars', Ian Dury.

AUTOMATA's *Deus ex Machina* is to be converted for the Commodore 64 and Amstrad CPC464.

The Amstrad conversion is being done by Andrew Stagg, who first programmed *Deus* for the Spectrum. Freelance programmer Colin Jones is working on the Commodore version.

"We are making the scoring system slightly more accessible for the new machine, so that it is easier to finish with a positive score," said Mel Croucher of Automata. "Some of the screens on the Commodore will be slightly more elaborate, but apart from that it will be a

straight conversion."

Deus ex Machina on the Commodore 64 and CPC 464 should be available at the beginning of January, with both versions priced at around £15.

Adventures on a budget

MASTERTRONIC has launched the first of a new series of budget-priced adventure games to retail at just £2.99.

The first releases, under the label Master Adventurer, will be *Se-Kaa of Assiah*, *Black Crystal* and *Volcanic Dungeon*.

The last two have already appeared under the Carnell label. Ex-Carnell heads Roy Carnell and Stuart Galloway are now working for a division of Mastertronic, Mastervision.

"*Volcanic Dungeon* has been substantially rewritten, and graphics added, for its rerelease. *Black Crystal* will be

sold on two cassettes, amounting to 180K of programming altogether," said Mastertronic managing director Martin Alper.

"Stuart Galloway and Roy Carnell will continue to write a number of adventures for the Master Adventurer label.

"We settled on £2.99 as a realistic budget price, because of the relative complexity of adventure programming," Martin continued. "*Black Crystal*, however, will be £3.99, since the package comprises two cassettes."

All titles are available for the Spectrum. *Se-Kaa of Assiah* will also be available for the Commodore 64, and a 64 version of *Black Crystal* should be released in the New Year.

Argus teams with McCartney

ARGUS Press Software is to release a computer game based on the new Paul McCartney film *Give my Regards to Broad Street* in January to coincide with the film's release in this country.

The game will be one of Argus's new Mind Games series, which includes *American*

Football and the recently launched *Alien* (Popular Computing Weekly, October 4).

The film *Give my Regards to Broad Street* is largely the brainchild of Paul McCartney, who directed and stars in it, along with wife Linda, Tracey Ullman, Ringo Starr and Barbara Bach.

"The storyline of the game follows the film quite closely and has been written with Paul's help," said Peter Holme of Argus.

Argus has gained the worldwide rights to the computer game of *Broad Street*, which will initially be released for the Commodore 64 and the Atari at £6.95. Argus is also considering a Spectrum version.

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Left hooks

Your observation on the size of our CP/M (*Popular Computing Weekly* Vol 3 No 46) might be tempered by consideration of the following points.

A 64K CP/M would not allow as much space to Basic as does the approach adopted by our disc system.

The price of CP/M software is classically £250 per module for things like integrated accounts, databases and the like. We offer these (with no loss of function) at £30-50.

All the hooks are present in the system design to permit some enterprising soul to devise an MSDOS 512K add-on if they so desire — but then it might not cost £199 and offer dual operating systems and be bundled with *Dr Logo*, might it?

William Poel

Amsoft

Brentwood House

169 Kings Road

Brentwood

Essex

More ways to run than one

I've found something interesting on the Commodore 64. If you plug a joystick into Port 2, hold in the fire button and press 'N', it displays *Load Press Play on Tape*, the equivalent of *Shift/RunStop*.

Paul Valentino

87 Merriman Road

Blackheath

London SE3

Version therapy

I was most surprised to read the comments of Graham Taylor in his review of *Fighter Pilot* in this week's *Popular Computing Weekly*. His references to the "superior facilities" of the 64 must surely be in the context of sprite-oriented arcade games.

For Mr Taylor's information, the 6502 processor in the CBM64 is far inferior to the Z80 (Spectrum) when extensive high-speed 16-bit mathematics is involved, eg, 3D co-ordinate geometry, aircraft flight cha-

acteristics, etc.

Retaining all the features of the Spectrum version demanded considerable enhancements to the algorithms used, and to achieve such a faithful conversion is a credit to the programmer.

With regards to the comments "less impressive" and "disappointing", this view is not shared by the many distributors and customers who have patiently waited for *Fighter Pilot 64*.

DK Marshall

Digital Integration

Watchmoor Trade Centre

Watchmoor Rd

Camberley

Surrey

We still feel that the Spectrum version of *Fighter Pilot* is better than the Commodore one.

Dragon lives on

As the proud owner of a Dragon 32 computer which has had more than its fair share of what I would call 'non-support', I would like to know if you are going to support the Dragon more than you have done in the past few weeks.

Even though the so-called 'professional' people and some software houses don't like it, hundreds of owners do, and would like more of the good information you have published in the past.

MP Baker

5 South Close

Bury St Edmunds

Suffolk

You have no need to fear. We will continue to support the green-screen beast as long as there are enough readers who want us to do so!

Checkmate chess test

Here is a little challenge for your chess playing readers. How good do you think your computer chess program is? How many moves can it see ahead? Can it solve mate in two moves problems? Perhaps



WHITE MATES IN 2

you'd like to try it out on this one: give the computer a king and both rooks. Give yourself a lone king. Can it checkmate you?

John Rundle

26 West Road

Aldershot

Hants GU11 3PL

PS If any reader sends me an SAE plus a 20p coin I will send them 12 diagrammed chess position problems with solutions.

Software libraries

I was surprised to read Phil Roger's comments in *Peek & Poke*, in the October 17 issue, with regard to Software Libraries: "I must confess that I get a little uneasy when I see adverts for the software hire companies — if an individual attempted to do this he would probably be threatened with dire punishments."

It would seem that to Phil, software libraries might verge on the illegal. While appreciating his concern, libraries do provide an excellent opportunity for computer owners to sample a great variety of programs. How many times has a superficial two minutes snatched in a shop prompted you to buy, only to find after an hour's play at home that the money was wasted? We find to a large extent that after hiring tapes members purchase them.

One other point is that all our Spectrum and Commodore

titles are hired only with the supplier's permission and most magazines, including PCW, will only accept advertisements from companies who state this.

Peter Johnson

Director

Softnet

122 South Circular Road

Dublin 8

Eire

Thank you Sinclair

As the liaison officer for PHAB (Physically Handicapped and Able Bodied) in the Derby area I have recently been trying to start a computer course for the physically handicapped within the Derby area, as I feel that in the near future a large amount of office work could be done from the home, by disabled people, via a computer network.

In my search for computer equipment I contacted Sinclair Research and would like to thank them through your magazine for their kind donation of a 48K ZX Spectrum.

CD Thompson

101 Princes St

Derby

DE3 8NS

Spoilt for choice

Re your November 15 issue containing the Amstrad top ten games list, compiled by Boots.

This indication of the most popular games of the CP464 is totally misleading, as in Bristol at least, of well over 80 games available for the machine, Boots have only ever stocked half a dozen.

Three days ago they had *Roland on the Ropes*, *Roland Goes Digging*, *Graf Spey*, and *Hunter Killer* — exactly four titles.

The Amstrad is not even advertised in the store although the Spectrum and Commodore C16 are — the shop had no joysticks, printer, and no plans to stock the disc drive and had "no idea what software, if any, is on order."

PJ Long

3 Victoria Place

Bedminster

Bristol



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Astro-Link

A steady hand and nerves of steel are needed to complete the testing task set for Commodore 64 users by Laurence Beattie

In this game you must guide your ship off the surface of a planet and through an asteroid belt, in an attempt to dock with an orbiting mothership.

On docking — this isn't easy — you move to a harder screen with a greater number of asteroids. The quicker you complete your mission, the more points you will be awarded.

The ship is controlled by joystick, which accelerates your craft in any direction, and there is a constant gravitational pull towards the planet that you must overcome.

The program is well documented with Rem statements.

Program Notes

Variables

- HP — High score
- SC — Screen Number
- PO — Score
- vu — Vertical velocity
- vr — Horizontal velocity
- MX — Horizontal position of mothership
- T1 — Start time
- T2 — Finish time
- JS — Position of joystick



```

1 REM**** ASTRO ****
2 REM**** BY L.BEATTIE ****
3 REM**** ****
4 HP=0
5 PRINT "O":PO=0:SC=0:POKE646,1
6 POKE54276,0:POKE54272,255:POKE54273,10
7 POKE54277,16:POKE54278,240:POKE54279,15
REM****SET UP SOUND***
10 POKE53280,12:POKE53281,0:POKE53282,12:
POKE53286,15:REM****SCREEN COLOURS***
20 FORX=53287TO53294:POKE(X,1):NEXT
REM****SPRITE COLOURS***
25 FORX=12992TO13248:READY:POKE(X,V):NEXT:
REM****SPRITE DATA***
30 FORX=2040TO2045:POKE(X,203):NEXT:POKE2046,205:
POKE2047,204:REM****SPRITE POINTERS
40 POKE53276,255:REM****MULTICOLOURS***
41 T=TIME
42 REM****NEXT SCREEN***
45 VU=0:VR=0:V=200:MX=INT(RND(1)*200)+24
47 PRINT "O":FORX=0TO19:S=INT(RND(1)*10):
PRINTTAB(X)," " :NEXT
50 FORX=53248TO53258STEP2:POKE(X,2)*INT(RND(1)
*126):NEXT:POKE53262,160:REM****X
60 FORX=53259TO53249STEP-2:POKE(X,
(255-(53261-X)/2)*+25:NEXT:POKE53263,200:REM V
69 REM TEST:POKE53249,255:REM TRAPOUT
70 POKE53269,192:FORX=0TOSCREEN:POKE53269,
PEEK(53269)+(2*X):NEXTX
71 X=PEEK(53278):POKE53264,0
79
80 REM****MAIN LOOP***
82
90 REM****MOTHERSHIP***
92 MX=MX+1
93 IFMX=96AND(PEEK(53264)AND64)=64:THENPOKE53264,
PEEK(53264)-64:MX=0:GOTO95
94 IFMX=256THENMX=0:POKE53264,PEEK(53264)+64
95 POKE53260,MX:POKE53261,50
99 REM****ASTEROIDS***
100 FORX=53248TO53258STEP4
101 IFPEEK(X)<254THENPOKE(X,PEEK(X)+2:
IFPEEK(X)>85THEN110
103 IFPEEK(X)=85THENPOKE(X,0):POKE532
PEEK(53264)-2*(X-53248)/2):GOTO110
105 POKE(X,1):POKE53264,
(PEEK(53264)-1)*X/(X-53248)/2)
107 REM****NEXT ASTEROID***
110 IFPEEK(X+2)>1THENPOKE(X+2),PEEK(X+2)+2:
IFPEEK(X+2)>85THEN120
111 IFPEEK(X+2)=1THENPOKE(X+2),254:POKE53264,
PEEK(53264)-2*(X-53248)/2):GOTO120
115 IFPEEK(X+2)=6THENPOKE(X+2),85:POKE53264,
PEEK(53264)+2*(X-53248)/2)
120 NEXTX:REM****NEXT ASTEROID***
130 GOSUB790:IFX=0THEN5
135 IFX=1THEN45
140 REM****SHIP MOVEMENT***
145 JS=15-(PEEK(56321)AND15)
IF(JS<0)THENPOKE54275,129
330 ON(JS+1)GOSUB340,350,360,340,370,380,390,
340,400,410,420
335 GOTO430
340 POKE54276,120:RETURN
350 VU=VU-2:RETURN
360 VU=VU+2:RETURN
370 VR=VR-1:RETURN
380 VU=VU-2:VR=VR-1:RETURN
390 VU=VU+2:VR=VR-1:RETURN
400 VR=VR+1:RETURN
410 VU=VU-2:VR=VR+1:RETURN
420 VU=VU+2:VR=VR+1:RETURN
430 IFPEEK(53263)<200THENVU=VU+1:REM GRAVITY
435 REM****LEFT+ RIGHT LIMITS***
440 H=PEEK(53262)+VR
441 IFH<0ANDPEEK(53264)>127THENPOKE53264,
PEEK(53264)-128:H=255+H:GOTO470
442 IFH<21ANDPEEK(53264)<128THENH=21:
VR=0:GOTO470
443 IFH>255ANDPEEK(53264)<128THENH=H-255:
POKE53264,PEEK(53264)+128:THENH=H-255:
447 V=PEEK(53263)+VU
448 IFV=200THENV=200:VU=0
500 POKE53262,H:POKE53263,V
510 GOSUB790:IFX=0THEN5
512 IFX=1THEN45
520 T2=TIME:PRINT "TIME : ";INT((T2-T1)/60):
PRINT "O":GOTO92
700 REM****COLLISION***
705 X=PEEK(53278)
710 IFX=0ORX=96THENX=2:RETURN
720 IFX=192ANDPEEK(53260)=PEEK(53262)
THENPOKE53263,PEEK(53261)+21:GOTO730
722 POKE54273,4:POKE54276,0:POKE54273,255:
POKE54276,129
725 POKE53294,2:FORX=1TO100:POKE2047,206:
POKE2047,204:GOTO740
726 POKE53269,PEEK(53269)-128:POKE54278,255:
POKE54276,128:GOTO740
730 POKE54276,17:PO=PO+50/((T2-T1)/60)+SC*5
735 SCREEN=SCREEN+1:IFSCREEN<6THENSTORE X=1:
RETURN
740 POKE646,4:PRINT "PRINT "O":YOU SCORED ";
INT(PO*100)"; POINTS":FORX=1TO3500:NEXT
745 REM****FIRE TO START***
746 POKE646,4
750 POKE53269,0:POKE53280,11:PRINT
"O":REM****PRESS FIRE TO START"
751 POKE646,7:POKE53281,0:PRINT:
PRINT "O":LAST SCORE ";INT(PO*100):
752 IFINT(PO*100)>HP THENHP=INT(PO*100)
753 PRINTTAB(20)"HIGH SCORE :";HP
754 IFSCREEN=6THENPRINT"O":TTTTTTTTTTTTTTT
CONGRATULATIONS : ALL CRAFT DOCKED."
755 X=45:Y=20:POKE53264,0:POKE53269,14:
POKE53271,1:POKE53277,1
760 IF(PEEK(56321)AND16)<0THEN780
770 POKE53277,0:POKE53271,0:POKE53269,0:
RESTORE X=0:RETURN
780 X=X+1:Y=Y+1:IFY=230THEN755
785 POKE53248,X:POKE53249,Y:GOTO760
996
997
998 REM****DATA ***
999 REM****ASTEROID***
1000 DATA0,0,0,0,5,0,0,9,64,2,31,0,0,95,220,2,
85,223,10,95,219,38,111,220
1001 DATA3,86,223,153,87,251,154,151,244,41,
119,156,42,189,223,10,151,247,42
1002 DATA13,181,42,149,231,10,169,14,2,149,64,
0,21,64,0,6,64,0,5,0,0
1003 REM****SHIP***
1004 DATA0,36,0,0,36,0,0,167,0,0,151,0,2,170,
128,2,151,192,2,151,192,2,151,192
1005 DATA2,151,192,2,151,192,2,151,192,2,151,
192,2,151,192,2,151,192,2,151,192
1006 DATA2,151,192,0,44,0,0,44,0,0,167,0,2,151,
192,2,151,192,0
1007 REM****MOTHERSHIP***
1008 DATA2,151,192,2,151,192,0,167,0,0,44,0,0,
44,0,2,151,192,2,151,192,2,151,192
1009 DATA2,151,192,2,151,192,2,151,192,2,151,
192,2,151,192,2,151,192
1010 DATA2,151,192,2,170,128,0,151,0,0,167,0,0,
36,0,0,36,0,0
1011 REM****CRASH***
1012 DATA0,0,0,0,140,0,0,0,0,3,20,0,50,133,192,
0,148,12,40,205,192,0,55,112
1013 DATA4,255,198,51,183,0,48,255,104,3,55,64,
0,236,199,128,165,64,12,167,64
1014 DATA0,165,112,32,229,72,12,170,112,0,37,0,
0,165,68,2,173,80,0,0

```

Celtic rangers

John Cook delves into Celtic myth with Gargoyle Games

It never rains in Southern California, but 5000 miles away in Dudley it does; in fact it buckets down incessantly with a vengeance. However, this West Midlands town, complete with ruined castle and zoological gardens (both world famous in Dudley, according to Jasper Carrot) may soon become a place of pilgrimage for computer adventurers, as it is the home of Gargoyle Games, producer of *Tir Na Nog*, arguably one of the top ten Spectrum games this year — certainly in quality and, if there is any justice in this world, sales too.

Gargoyle Games is not a household name. They are not an offshoot of a megacorporation nor are they your common or garden teenage geniuses who, whilst taking a break from unified field theory at university, taught themselves Z80 machine code and BMX racing. The truth is quite different.

In fact, Gargoyle was formed less than a year ago, by two colleagues, Greg Follis and Roy Carter, who, after a combined total of almost 30 years experience in commercial programming techniques, decided to write games for home computers.

Gargoyle needed some marketing expertise so Greg and Roy enlisted an old friend, Ted Heathcote, whose experience, surprisingly enough, was in running a clothing business. "Menswear is really very similar to software," he told me, and while I have yet to be seen sporting matching cassette box and tie, *Tir Na Nog* seems to be doing well under his guidance.

I asked the others a little about their computing backgrounds, neither providing the expected answers. Greg shrugged, "Well, after getting chucked out of Art School I did loads of jobs, and seemed to end up in computers." Roy continued, "I was working as a computer operator in a company, and the programmer left. I think they took me on because I was cheap!"

Gargoyle's first release, in April of this year, was *Ad Astra*, an entertaining little space wars shoot-em-up. Whilst this program was never going to change the world,

it attracted something of a cult following, and was successful enough to encourage them to invest further time and effort in the next program, which turned out to be TNN.

For the uninitiated, *Tir Na Nog* is based on the exploits of a Celtic hero, Cuchulainn, and his deeds in the ancient otherworld *Tir Na Nog*, which means 'Land of Youth', his task being to unite the four parts of the Seal of Calum. The game oozes class, with outstanding graphic animation, enigmatic puzzles and a genuine atmosphere of mystery and adventure.

Greg, who designed TNN, told me something about the original idea. "The Celtic myths have a great feel to them," he commented, "and no-one has covered them before."

The program comes with a booklet containing extracts from the *Leabhar Gladhach*, the Book of Tears, which are themselves very evocative. Greg looked a bit sheepish. "We wrote those extracts ourselves," he admitted. "There is in fact no such book... but it's a bit difficult to tell that to someone who's just spent hours in a library looking for it."

Perhaps the most striking feature of the game, initially, is the animation of the central character. Cuchulainn strolls around, hair waving behind him, in a most convincing fashion. How is it done? "The scrolling is done off-screen, then put on screen, phased between interrupts," explained Roy. Likewise the many frames for Cuchulainn, using a mask and overlay so you can't see through him. Using the mask only has the effect of making him look invisible... which is essential for completing the main quest.

I asked how long it took, real-time, to complete the game. "Don't ask me... I keep getting lost," said Roy... this may explain why it is he who does most of the actual programming. "In the final phase of testing though, Greg went through the whole quest, and it took him six hours." That's with knowing where everything is and what everything does! Bearing this in mind, they expect months to pass before a correct

solution is found...

TNN is certainly big, but how big? Greg grinned. "About 3000 miles worth of road," he answered, "but to store it as pure map would take up far too much memory, so what we do is store a template of the area, and specify the appropriate alterations as you move along."



I've been having a little trouble with TNN so I ventured a few specific questions of my own, like how do you 'kill' Sidhe. "You must carry at least two weapons, and thrust with one of them," came the answer.

Also, what does the face in the Hunters' Cave actually say? Certainly not what is shown printed on screen. Gargoyle Games collectively smirked. "You'll have to work that one out for yourself," I was told. Lip readers drop me a line. "We're thinking of producing a screen sized animation synchronised with a sound output so it talks to you," continued Greg. "It links in with some of the research we've done on Artificial Intelligence...it would be programmed to argue with you." That's for the future though, what's coming up next?

"There's the Commodore 64 version of TNN; that should be coming out after Christmas; we're also considering an Amstrad conversion. Then there's the pre-quel to TNN, set in the land of the living — this time in a city. This will limit the size of the game, so we have more space for animations...which we think we are getting pretty good at." After that? "We're trying to develop a game on *The Hunting of the Snark*, by Lewis Carrol, if we can get the rights. It'll be a three times removed lateral thinking adventure," he added with relish.

"What we are trying to do is to make games where you can create your own sub-plots within the adventure," remarked Roy. "We've had phone calls from people that have hidden items within the game, save it, then challenge their friends to find them." "As if the original wasn't hard enough.

Further into the future, the team intends to move into small business software, albeit under a different name. "I think the arrival of home micros has removed the fear from computers," said Greg. "In five years time, all the kids who are using computers at school now will be at work, and in business. There's a lack of the kind of good software for small companies, so we aim to write it."

You know, if Gargoyle keep this up, the castle and the zoo are in for some pretty heavy competition in Dudley.



tír na nòg



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Addition

Hardware Amstrad DDI-1 Disc Drive **Price** £199.99 **Supplier** Amstrad Consumer Electronics.

With the launch of its DDI-1 disc drive unit for the CPC 464 machine Amstrad is now offering the cheapest CP/M computer available; controversy may surround precisely how 'standard' the system is (it bears the Digital Research stamp, version 2.2), and some people may be overawed with the idea of such an operating system taking over their home computer.

Fortunately, though, you can view CP/M as "icing on the cake". The disc system comes in two parts, drive and interface. The disc drive itself is housed in a box that also contains a mains power supply; it is rather long, but nevertheless compact. The drive itself is of the 3inch Hitachi/Panasonic format, using fully enclosed discs. In operation the drive is both fast and quiet, with a good solid response when load-

operating system Rom is 7, so when the firmware sets up the system it initialises the DOS but returns control to Basic. By cutting a wire link inside the interface it is possible to make the DOS's Rom become number 0, which means the computer will power up in CP/MN. But I am getting ahead of myself — the first thing people do with their new disc drive will *not* be to delve inside and start hacking away at the circuit-board.

How does the system work in normal use?

It operates in two basic modes — Amsdos, the Amstrad disc operating system — and under CP/M.

When you first attach the disc drive and interface there is no immediately obvious change; the computer powers

on to disc. To provide the RSX calls and give Amsdos work-space, some Ram needs to be borrowed from the computer; it appears that just over 1K is lost to Basic. The extra routines associated with the DOS are vectored through Ram jump-blocks, and these are documented in an appendix to the firmware manual.

So far, very good. The disc drive provides a storage method about 50 times faster than cassettes, and automatically makes back-up files when files are closed (it renames the old file with a *Bak* suffix and deletes any other back-up). Each side of a disc's 40 tracks holds 180K, of which the directory occupies 2K.

With CP/M, however, 9K is lost to the system, and there are two other formats possible. Vendor format leaves space for CP/M information, to avoid you selling the property of Digital Research (who employ some very good lawyers!). IBM format allows discs produced on an IBM PC with CP/M 86 and 3inch disc drive to be read by the CPC 464 and vice-versa. This last option gives 154K capacity.

What delights await when the |CPM command is used? Assuming a system disc is in place, some data is loaded, the screen changes colour and the screen notifies that we are in CP/M. A *Dir* command will show that

the system disc provides not only the 'standard' utility programs, such as *ED*, *MovCPM*, *Pip*, *Asm* and *Ddt* (these last are an 8080 assembler and de-bugger respectively) but a number of Amstrad additional commands such as

Cload and *CSave* (tape/disc transfer), *Disc-copy*, *SetUp* and *Amsdos*.

There are two restrictions placed on any CP/M programs you might wish to run—other than the fact that they need to be on 3inch disc. As the CPC 464 firmware uses all of the Z80's restarts but RST 6, this is the only restart that is available to CP/M. DDT, for example, normally uses RST 7: so the Amstrad version has to be patched to use 6. Other programs may also have to be patched to use *Rst6*.

The other is the contentious matter of the size of the transient program area — how big a program can be run in Ram? Most CP/M systems allow about 56K for programs to use, but as 16K of the CPC

ing and ejecting. Connection to the interface is achieved with a ribbon cable complete with a parallel connector for plugging in a second drive. Two disc units is the most that the system can handle. The interface plugs onto the exposed edge connector at the rear of the CPC 464. This arrangement is not particularly stable, (remember the ZX81 Ram pack wobble?), but gold-plated connectors are used. The interface itself contains a floppy disc controller chip (uPD765A) and a 16K 'sideways' Rom that occupies addresses &C000 to &FFFF. This puts it in competition with not only the screen Ram but also the Basic interpreter.

The CPC 464 runs the Rom with the lowest number as the foreground program. Basic is Number 1, while the disc

up in Basic. However, as soon as you use what would normally be a cassette command, it is the disc rather than the cassette that responds. Stream 9 has been re-routed and the firmware jump-blocks are overwritten during power-up.

Amsdos, as this level of operation is called, also adds a number of extension commands to Basic, provided by the resident systems extensions (RSX) and therefore preceded by a bar symbol. It is possible to select the default drive, erase and rename files, and switch back to cassette operation, either for reading, writing, or both. Issuing the commands */TAPE.IN* and */DISC.OUT*, for example, will result in a *Load* operation fetching a program from tape and a *Save* putting it



464's memory is used for screen display, it is not surprising that there is only 39.5K available to run programs in Rom. This is not as serious a drawback as it might seem — the whole point of CP/M is that portions of program and most of the data is held on disc and overlaid into Ram when required. Some programs will need to be altered, which, while not a layman's job, should not be a major task.

I have seen such items as Microsoft Basic and Wordstar running on the

Amstrad without patching, but these both cost more than the computer so who would want to run them anyway?

Amsoft expect to provide a number of CP/M programs fully compatible and tested with the CPC 464, at affordable prices. The first examples will be Quest's ABC accounts package (£99 for the three basic modules, instead of a claimed £750 for other CP/M machines) and the Microscript/pen/spread word processing, database and spreadsheet pro-

grams at £50 each.

If you want anything else, Amsoft will put you in touch with a company that can 'port' across any CP/M program at retail prices — Timatic Systems of Newgate Lane, Fareham, Hants.

What must not be forgotten is that, even without CP/M, the disc system for the Amstrad CPC 464 would still be a very worthwhile addition — add CP/M and you have much more than just icing on the cake.

Jeff Naylor

Bass pattern

Hardware Commodore Music Maker Micro Commodore 64 Price £29.95 Supplier Commodore.

At around £30, the Commodore Music Maker is priced low enough to encourage those who've previously been wary of forking out for music peripherals for their 64s to do so. It is also clearly aimed at the user who might be thinking of buying a small Casiotone or similar home organ.

The package has been produced for Commodore by Music Sales — a company previously best-known for its vast range of play-in-a-day songbooks featuring everybody from Abba to ZZ Top.

Music Maker comes with its own mini-songbook containing such gems as *Chopsticks*, *Jingle Bells* and *Sailing* arranged for the simple, rather tacky plastic 'overlay'

keyboard also provided as part of the package.

This plastic keyboard — in Commodore co-ordinated colours — clips over the computer keyboard, allowing you to feel a little bit like you're a proper synth while you're actually hitting QWERTY keys. A clever idea, although one that would have benefited from more thoughtful design.

The software, available either on disc or cassette, is not unimpressive. On loading you are right into the program and can immediately tap out a tune on the keyboard. A menu offers you the options of selecting one of eight voices, changing octaves — two octaves are available at any one time,

altering voice envelopes and filter characteristics, playing in poly-mode (up to three notes played simultaneously), selecting one of three preset rhythms and altering them by changing or removing the bass pattern and, finally, sequencing (with a Save and Load option).

All this sounds impressive, but the facilities offered are, in fact, small considering the full potential of the 64's SID sound chip.

The sequencer, for example, holds a maximum of only 256 notes and does not allow poly-mode or even 'overdubbing' (playing one track to the accompaniment of an already sequenced one).

That said, the system does have some nice features — the slide effect, the tuning facility and the ability to tap out different rhythms for a single sequence particularly caught my fancy.

The inclusion of the simple mechanical music keyboard overlay is only really warranted to give the system more 'instant' appeal.

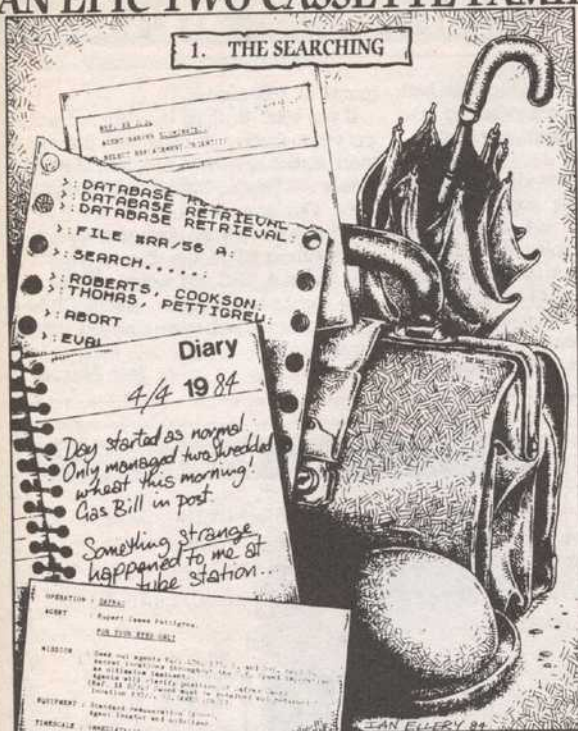
If you don't need the illusion of a music keyboard and are quite content to use the C64's Qwerty keyboard then I would recommend in preference Supersoft's *Music Master* which costs slightly less than £30, or Waveform's *MusiCalc* which costs somewhat more.

Gary Herman



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Supreme

Program *Knight Lore* **Price** £9.95 **Micro** Spectrum **Supplier** Ultimate Play the Game, The Green, Ashby de la Zouch, Leics.

There are many, many reasons for choosing an XYZ computer in favour of a CDE, for going home grown, American, or even turning Japanese. My opinion, for what it's worth, is simple: the Spectrum is the only micro I know where the quality and amount of software available is

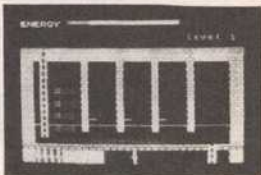
at any of five locations you have to negotiate the hazards of the castle whilst collecting items that litter the rooms. Each room is viewed in 3-D from a top corner and the graphic design is wonderful. Each room is filled with a variety of problems to overcome.

Time elapses according to a sun/moon display towards the bottom of the screen and when the moon appears you make a quirky transformation into a fairly cute werewolf and back to Swordsman during the day.

The most impressive aspect of *Knight Lore* is not only the sheer fun of playing, but the obvious care and intelligence

feature — instead of leaping over objects you can cling to one of two pipes above your head — timing is less crucial, but hanging around uses up energy and gives you a lower score. If you are hit by the boxes, from above, you are flattened, while the rolling barrels knock you head over heels, which is neat.

This is not enough, though, to disguise what is a rather boring game. Sound is reasonable but the graphics are characterless, apart from your little figure's victory dance when a successful crossing of the warehouse floor is made. More objects and the appearance of pur-

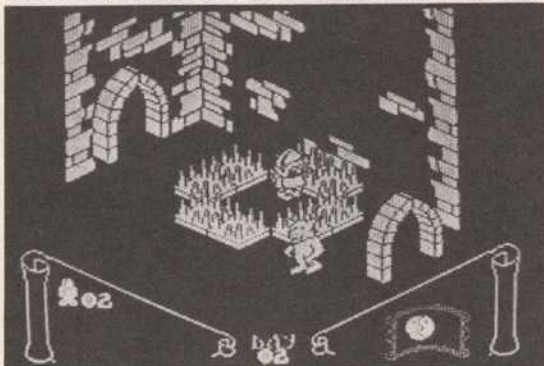


suing ghosts add to the difficulty but don't really contribute much variation.

At an ultra bargain price this might have been acceptable, but this is mid-price.

Bewarehouse is a good name — it deserved a better game.

John Minson



high enough to make it worth purchasing for that reason alone. *Manic Miner* and *Lords of Midnight* are two examples. We now have another.

Knight Lore from Ultimate is the most technically supreme game that I have ever played. It is a hideously addictive and compelling arcade/adventure and certainly the first program that comes close to merging the two genres.

The scenario is a direct sequel to *Sabre Wulf*; as 'Our Hero', you have been bitten by the werewolf and are suffering mighty transformations. One such has dumped you in a 128 room (I've found 111) castle wherein lives a malevolent wizard with his cauldron. Starting

with which it was written. How to defeat attribute problems? Only use two colours (this actually adds to the atmosphere of the game and makes mapping far easier — there are green, purple, yellow and blue rooms). Also the objects collected can be used to solve not only the objects of the game (making a potion to cure the werewolf's curse, but to assist in some of the arcade section.

It is impossible to give more than the merest hint of what is involved in *Knight Lore* and all I can suggest is that you buy a copy (and a Spectrum if necessary) as quickly as possible.

Gordon Sneddon



Hang around

Program *Bewarehouse* **Micro** Spectrum 48K **Price** £4.95 **Supplier** Positive Image Software,

are you enter the *Bewarehouse*? It sounds like a line from a Spiel-

berg movie poster, and the setting of a haunted warehouse holds similar promise. But the instructions foretell of greater horrors — 'Left', 'Right', 'Jump' and 'Super Jump'.

Is it? Can it be? Yes — it's another dodge the barrels, boxes and/or ghosts game.

It does contain one unusual

Hard rock

Program *Boulder Dash* **Price** £8.95 **Micro** Commodore 64 **Supplier** State Soft, Business and Technology Centre, Bessemer Drive, Stevenage, Herts.

The popularity of maze games continues unabated. *Boulder Dash* is one of the most fascinating. The objective is to tunnel your way round a series of caves collecting as many jewels as you can on your way. As you dig through the ground you have to be careful, since if you under-

mine any boulders they will fall into they hit something solid, ie, you, if you're underneath. Deadly fireflies and butterflies in the caves will also destroy you given half a chance. If you can avoid all the hazards, then, dripping with jewellery, you can move on to the next cave.

Each cave covers several scrolling screens, and the later ones are increasingly difficult. The action demands not only fast reaction speeds, but also careful planning.

Thoroughly addictive.

Richard Corfield



Hell-bound

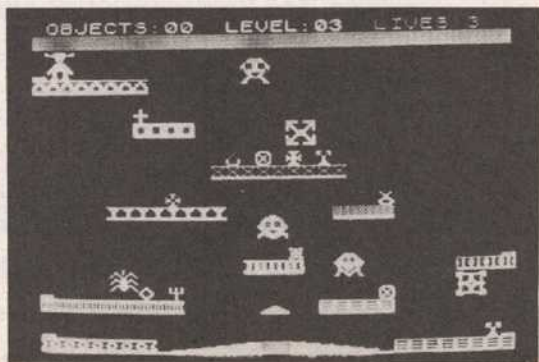
Program *Beebul* **Micro** Spectrum 48K **Price** £1.99 **Supplier** Scorpio Gamesworld, 307-313 Corn Exchange, Manchester

Beebul has virtually only two controls — to move 'Left' and to move 'Right'

and it's none the worse for that.

It's a platform game, but instead of climbing and jumping and slide sideways and drop from level to level.

Your aim, as you descend through Hell, is to collect various treasures. There are more of these than you can collect on one descent, so a teleport is thoughtfully provided to return you to the top to



come down again by another route.

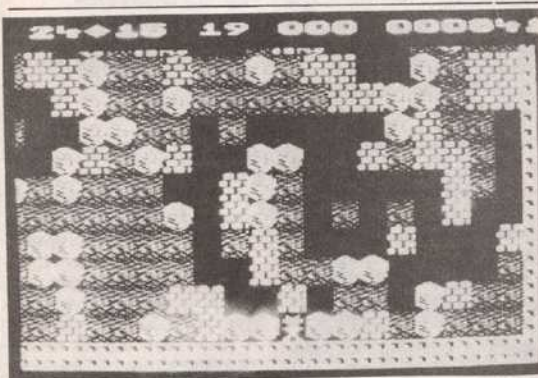
This being Hell, there are also assorted bouncing nasties, and dodging them calls for very careful timing. As you can approach several treasures from either side, and collecting the last one immediately transfers you to the next screen, a bit of strategy is called for too.

Beebul is not the most sophisticated game you will find on the shelves, but it is far from

the worst. Its monsters have character, it moves smoothly and pixel accuracy is possible without the premature death syndrome that bugs some slay-happy sprite games.

At this price it is worth having and makes you wonder how some software houses can justify far higher prices for less enjoyable games.

John Minson



In the dark

Program Bristles Price £8.95
Micro Commodore 64 Supplier State Soft, Business and Technology Centre, Bessemer Drive, Stevenage, Herts

Interior decorating gets the micro treatment in *Bristles*, a US production by First Star, marketed in the UK by State Soft. The houses you are contracted to repaint in the cause of the game seem to have been invaded by poltergeists, since you have to spend some of your limited time dodging various flying paint pots and wandering paint buckets. Additionally, there is a nuisance called Brenda the Brat who has the annoying habit of sticking

her handprints on your freshly painted walls, which you then have to repaint. Brenda, however, will keep her hands to herself for a while, if you bribe her with sweets.

Six skill levels make up the game. At level one you use normal paint in good light. In later stages you have to paint with clear varnish which means that you cannot see which rooms have been completed. Later still, you have to work in the dark, so that you cannot even see the rooms let alone tell whether or not they are painted!

The game gave me a lot of fun, and presents quite a challenge.

Richard Corfield



Souped-up

Program Overdrive Micro
Electron Price £7.95 Supplier Superior Software Ltd., Regent House, Skinner Lane, Leeds 7.

This review has taken a long time to get round to. Not because I've put it off and put it off, but because I

couldn't pull myself away from the race track.

Let me explain. You are the driver of a very (and I mean very) fast souped-up racing car — the red one. The computer is in charge of all the rest — the blue ones. Imagine an open road as straight as the Romans built them, and only the hills in the distance and an expanse of green all around you. Until you put your foot down cars are

whizzing past you at a phenomenal speed and disappearing into the far distance. You put your car into gear, step on the gas and you are away. The speed and excitement increase, as the tiny blue spots in the distance fast loom up into the shape of your opponents. Gauge your speed until the opportunity to slip between them or overtake on the inside

occurs, then step on it and the road is yours again.

Overdrive is a must for all Electron owners. The game does credit to the machine's sound effects, graphics (wait till you smash), and above all, the 3D effect which is very impressive.

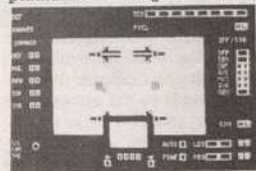
Fred Short



Plausible

Program Interdictor Pilot
Price £17.95 Micro Commodore 64 Supplier Supersoft, Winchester House, Canning Road, Wealdstone, Harrow, Middlesex.

There are a few flight simulators for the Commodore 64, but *Interdictor Pilot* is the first I have come across which simulates space flight. As you might guess from the name, the program simulates flight in a craft called the Interdictor Mk. III. A substantial pilot's instruction manual accompanies the cassette, and this book explains, in plausible sounding sci-fi terms,



all that the prospective pilot needs to know about the functions and operation of the craft.

The Interdictor is a combat patrol craft. In the simulations, you can practise take-off and landing from star-base, inter star-base flight and encounters with other ships (both friendly and hostile). A handy facility allows you to paralyse the other craft, so that you can examine them at close range. You can even run the simulator in slow motion for the tricky bits. Once you are proficient with the simulator, you can try your hand at some 'real' missions, where you will have no control over events.

There are too many details here to do it justice in a short review. It is essential to read the manual — which contains an amazing amount of information — before having a go, but it is well worth the effort.

Richard Corfield



Good value

Program QL Assembler Price
£29.95 Micro (Version AH and above) Supplier Computer One, Science Park, Milton Road, Cambridge.

While this assembler is not a full macro assembler it is powerful enough for all but the most advanced programmers as it can perform conditional assembly and will produce the code in a format to be used with a standard Sinclair linker program.

The assembler — and the editor which is supplied with it — may both be multi-tasked with say a Basic program or any other machine-code program which may also be multi-tasked. The space left which

you can use for other programs can be greater than 30K. You may also use this spare memory in conjunction with the assembler to load a copy of a file before it is assembled, so increasing the assembler's speed.

The manual supplied gives information on both programs, as well as giving an example of how to add commands to Basic. Chapter 6 gives a very useful look-up table of all the op-codes and shows what the state of the CPU's flags will be after an instruction has been executed.

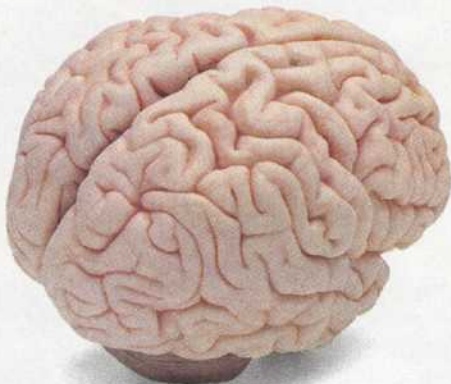
This assembler is good value. It does the job most people want it to do and is cheaper than the Sinclair assembler which is going to sell at £39.95.

Roger Thomas



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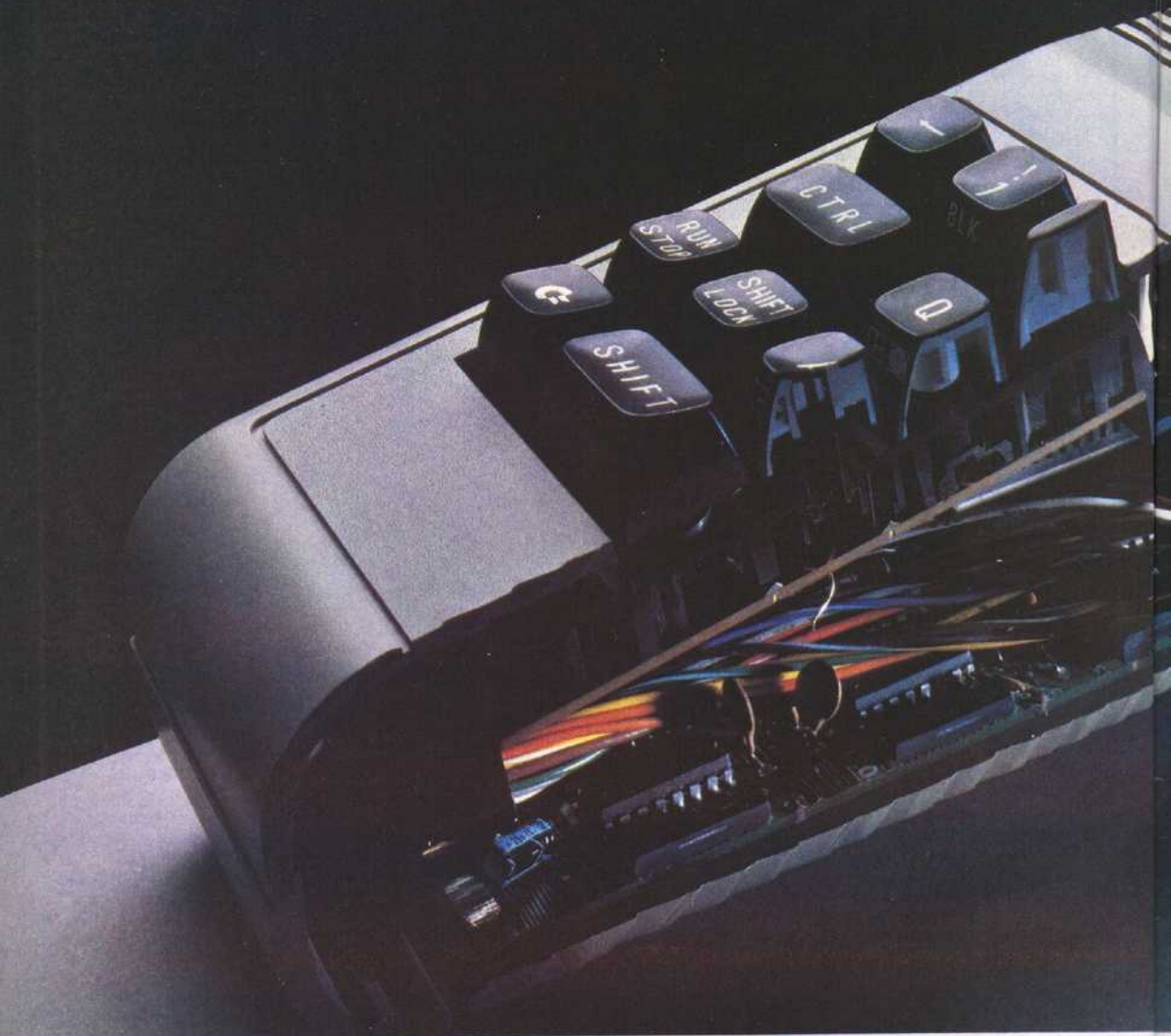
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Are you only using

To only play games on a Commodore computer is like asking Albert Einstein to work out the square root of four.

The computer's brain barely ticks over.

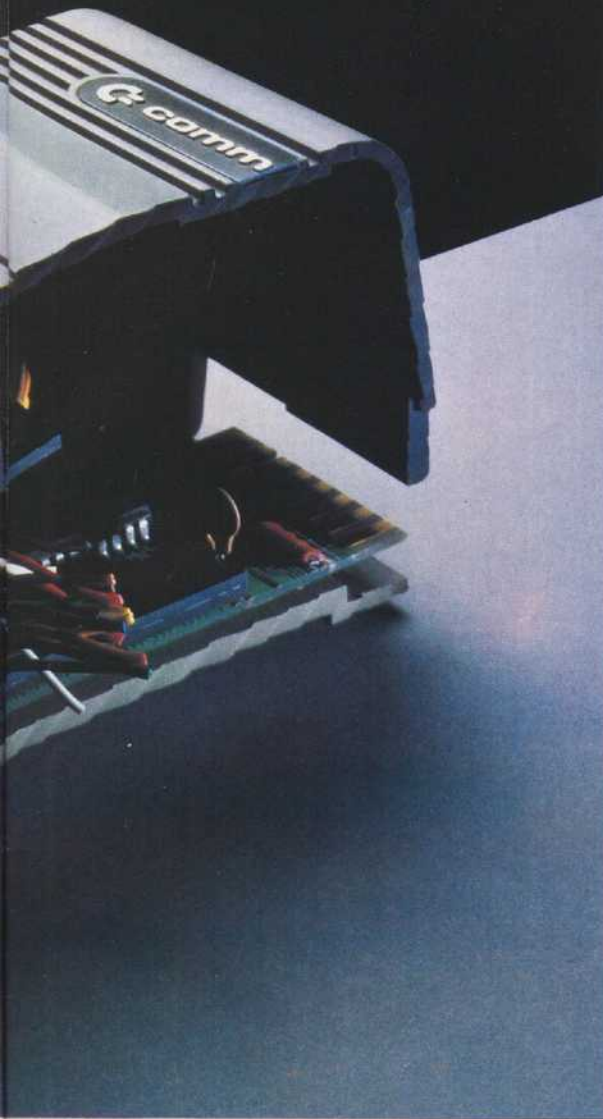
To really stretch it, you need more interesting software programs. For example, record keeping, interactive education, stimulating adventure games or word processing.

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Like a Commodore disk drive, a really fast storage and retrieval system with a vast memory.

Or a Commodore cassette unit, the inexpensive way of loading and storing programs.

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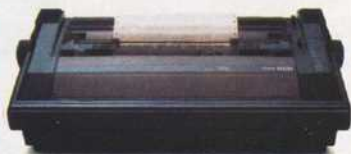
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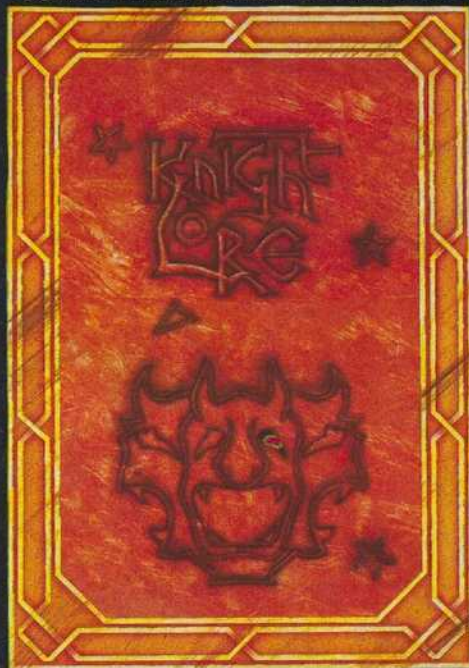
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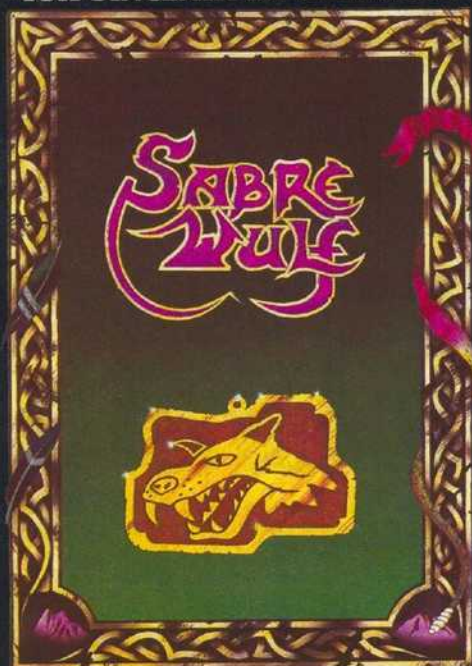
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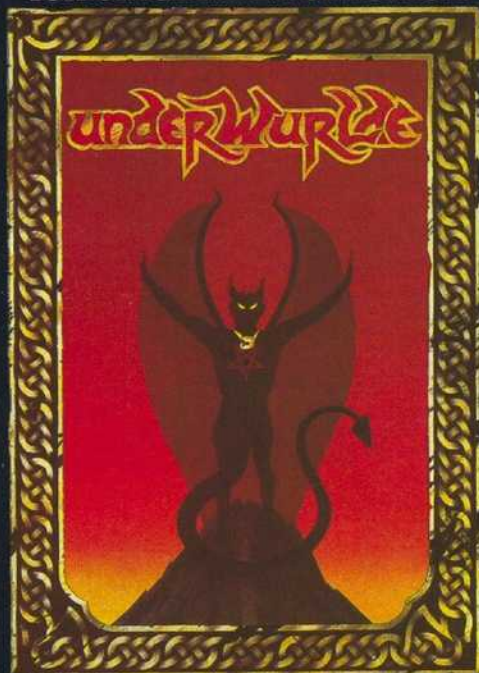


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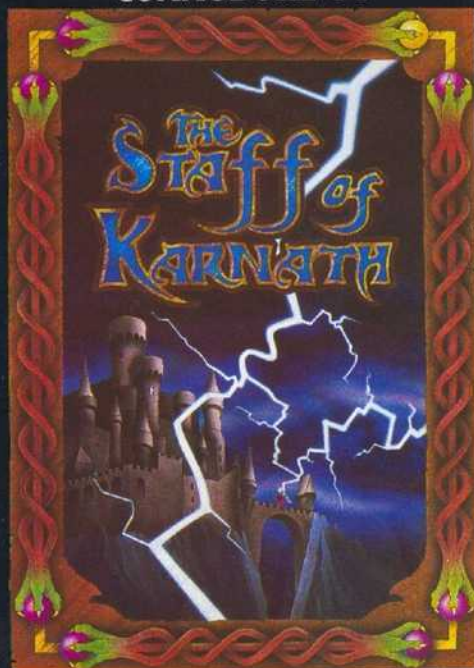
48K SINCLAIR ZX SPECTRUM



48K SINCLAIR ZX SPECTRUM



COMMODORE 64



"KNIGHTLORE", "UNDERWULDE", "SABRE WULF", and "STAFF OF KARNATH" recommended retail price £9.95 inc VAT. Available from W.H.SMITH, BOOTS, J.MENZIES, WOOLWORTHS and all good software retail outlets. Also available from ULTIMATE PLAY THE GAME, The Green, Ashby-de la-Zouch, Leicestershire LE6 5JU (P&F are included) Tel: 0530 411485

Xmas soft hits

From the thousands of software packages released this year we've tried to separate the exciting, innovate programs from the Manic Miner clones, furtive freddies, boring multi-screen ladders and platform games, illiterate adventures, mega-hyped rip-offs, glossy crud, 'I think people are getting bored by a good graphics' excuse, and many other time-wasting, finance-exhausting, excuses for original thought. It wasn't easy. Graham Taylor burrows out from under the pile to give you the details.

Spectrum

The Spectrum has a lousy keyboard, rotten sound and colour attribute problems that cause objects to change colour as they pass over one another — but it still gets more exciting and innovative software developed for it than any other machine.

Last year the Ultimate games, *The Hobbit* and *Valhalla* were the front runners. What are this year's wonder programs?

To begin with the familiar. Ultimate Play the Game has consistently produced software never worse than good and in *Knight Lore* we have its greatest achievement ever, a program so graphically superb it, as *Jetpac* did before it, that it ups the stakes on just what Sir Clive's ageing machine is capable of — a thundering 'now beat that' to the industry.

Knight Lore features Sabreman, a character seen in previous Ultimate games and now, presumably, a sort of mascot figure for the company. He is stuck in a castle of well over 100 rooms, the victim of a curse such that as day turns to night (indicated by the movement of a sun or noon arcing left to right

on the bottom of the screen) he turns into a rather dopey-looking warewolf.

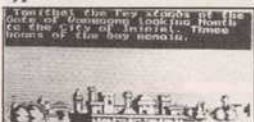
Sabreman has to collect objects from the rooms and deposit them in a specific order in a wizard's cauldron somewhere deep in the castle thus lifting the curse. Obviously the main part of the game is negotiating the various rooms and retrieving the various objects. The quality and style of the graphics are what lift the game away from all the other dodge and collect games.

Each of the castle rooms is represented with perspective and a sense of depth unsurpassed on home computers, the vantage point being as though seen through a camera mounted high in one corner of the room. Rooms are populated by guards, ghosts, spiky balls, prisoner style rovers, and sundry tables, ornaments, and other suitably medieval objects.

In most rooms the only way to get to the exit or desired object is either by clever timing, jumping before the lodge collapses to reveal spikes beneath, etc or ingenuity. Tables may be shoved around to provide surfaces

from which to jump, standing on an object you have collected may help you get over an otherwise impassable wall.

Apart from anything else the game is a triumph of design — the various characters are brought to life through cartoon-type animation.



Doomdark's Revenge

The 3D illusion works perfectly simply because of the care that has gone into the drawing and design. A near faultless game that, like other Ultimate games, leads you to say — "surely no more is possible on the Spectrum?"

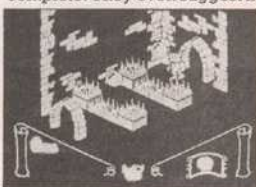
Technically much simpler but astonishingly innovative is *Deus Ex Machina* from Automata, a program like no other. *Deus* uses the computer as part of a total experience that also includes music, dialogue and sound effects to tell a story that mixes Aldous Huxley with rock concept albums, the Marx brothers and genetics to tell the story of life developing within the confines of a giant computer. An audio tape containing the music and dialogue is linked to the computer program via an introduction, spoken by Jon Pertwee. Other notables involved include Ian Davy, Frankie Howard and E P Thomson.

Although the effect is somewhat similar to a (very psychedelic) movie you are not merely a passive viewer. Whilst the program follows an inevitable sequence, within each section are 'games' in which you must try to assist the development of life.

Combining visual events with musical events makes for

a sense of total involvement in the program seldom, if ever, achieved in conventional computer games. It remains to be seen whether *Deus* represents the first step in a bold new direction for computer games or whether it proves to be a one-off creative cul de sac.

Another strong contender in the computer movie stakes has recently emerged. *Tir Na Nog* from Gargoyle Games features exceptional graphics and animation and a quest so difficult to achieve the manufacturers expect it to take over a year to complete. They even suggest it



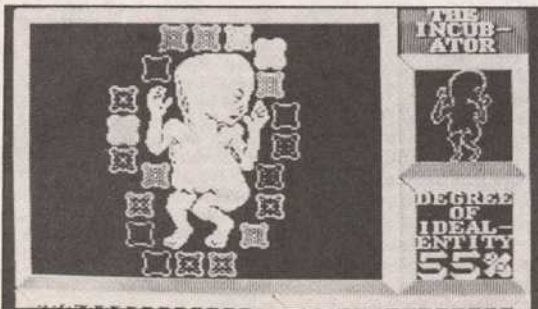
Knight Lore

may be necessary to consult your local library on ancient Celtic myth to unravel some of the conundrums.

The game features the hero Cacachulin who wanders the land of youth looking for the pieces of an ancient seal. A couple of the sections he may simply stumble across but most are already in the possession of other beings in the land — to get them back he must complete various sub-quests.

The actual graphic of the hero is animated using many more 'frames' than usual which makes his movement much more realistic than that seen before — his hair even waves about as if blown by the wind. The landscape is also impressively created over dozens of screens with distant castles and volcanoes, ancient monuments and secret doorways — all helping to create a sense of

Continued over the page



Deus ex Machina from Automata

Software choice

atmosphere.

Many other titles are worthy of consideration on the Spectrum. The recently released *Doomdark's Revenge* actually improves upon *Lords of Midnight* — the original, by developing the graphics, options available and scope of the game. Both games combine adventure and strategy styles in a complex and visually appealing way. *Backpackers Guide*

To the Universe is a good quality scrolling screen arcade game for those into alien bashing, but with enough extras to keep the interest up for those who want something more complex.

For those requiring more serious software Triptych brought out a range of packages for most micros which both teach and facilitate such things as decision making

and planning. *Tasword II* is still just about the best word processor around for the Spectrum. If you want to write your own game try the new improved picturesque machine-code utilities. Try Campbell Systems *Masterfile* if you want a filing system.

Knight Lore, Ultimate, The Green, Ashby de la Zouch, Leicestershire; Deus ex Machina, Automata, 27 Highland Road, Portsmouth, Hants;

Tir Na Nog, gargoyle Games, 74 King Street, Dudley, West Midlands; Doomdark's Revenge, Beyond, 3rd Floor, Lector Court, 153 Farringdon Road, London EC1; Backpacker's Guide to the Universe, Fantasy, Fauconberg Lodge, 27a St George's Road, Cheltenham, Glos; Tasword II, Tasmann, Springfield House, Hyde Terrace, Leeds; Picturesque Assembler, Picturesque, 6 Corkscrew Hill, West Wickham, Kent; Masterfile, Campbell Systems, 15 Rous Road, Buckhurst Hill, Essex.

Commodore 64

This year saw a flood of American software for this machine released in this country.

Much was no better or worse than home produced material but there were a few gems.

Ghostbusters proved that just because a computer game is a spin-off from a popular movie and is produced by a large company it doesn't have to be complete dross. On the contrary *Ghostbusters* is a pretty remarkable game in many ways.

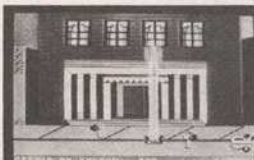
It mixes arcade zapping with a veneer of strategy elements, adds great graphics and even greater sound and produces a computer game that really does reflect the lively, ebullient and dazed qualities of the film. First you buy your ghostbusting wagon, traps and so on, then after consulting your map you must find and capture the ghosts. The scene changes from 'shop' to map to road to ancient mansion as appropriate and the graphics are large, colourful and funny — none of the ghosts look too threatening. However what really makes the game is the computer speech and the astonishing soundtrack music.

The hit music to *Ghostbusters* with its infectious rhythm and chorus is faithfully recreated on the Commodore 64 using only the three channel SID chip — a triumph of programming and arranging.

But it doesn't end there, using advanced digital techniques speech is produced by computer — not the usual Dalek cackle but recognisable and inflected sentences and phrases. In the intro section you can get the computer to shout 'Ghostbusters' in time to

the music.

Tony Crowther must be responsible for more quality games on the Commodore than any other single programmer. His distinctive work first with *Alligata* and then with *Gremlin Graphics* has seen few equals in terms of playability and graphics.



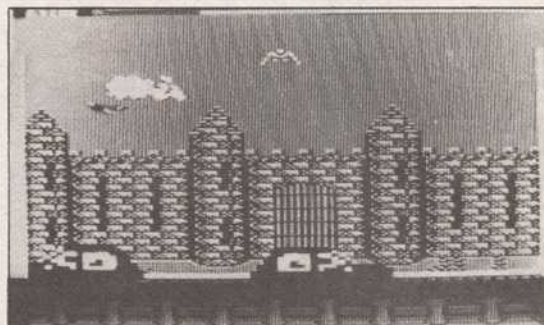
Ghostbusters from Activision

From a string of excellent and distinctive programs like *Loco, Suicide Express, Monty Mole*, I have picked *Potty Pigeon* as the best simply because I like the plot and as a game it seems to appeal to a slightly different audience from the usual tribe of teenage males.

The idea of the game is to fly a pigeon around collecting twigs and taking them back to the nest. Mostly this involves flying down on to the road to pick up each twig and returning to the nest. As the game progresses so traffic increases on the road and obstacles like other birds appear in the sky.

A simple plot but excellent graphic design produces a detailed background and a pigeon which is no mere blob but possesses both detail and character. Like many of Tony's games, the chief strengths of the game are the quality of the graphics and a well judged sense of pace.

Whilst there is an official *Zaxxon* version available for the Commodore, it is not as



Potty Pigeon from Gremlin Graphics

compulsive as a game which, though not an exact copy of the original, achieves to a far greater extent the sense of drama and strong visual sense that marked the original out.

Havoc has *Zaxxon's* edge-on, 3D cut-away view as well as occasional missiles and bombs to be negotiated but greater emphasis is given to the piloting element — some sections of the game require absolutely precise flying.

Perhaps more important still is atmosphere, the plane is piloted through what appears to be the empty streets of a vast city full of towering skyscrapers and gigantic monuments. The only sound (apart from the occasional missile) being the drone of your engine.

There are a number of other excellent programs for the 64. *Summer Games* from Epyx — released by Quicksilver in this country — is a version of the popular *Track and Field* game which actually surpasses the slot-machine original. CBS's UK venture into software contains at least one gem in *Impossible Mission* again created by Epyx. It features a daredevil action man, complicated plot and excellent speech like *Ghostbusters*. Listen out for the devilish 'kill him my robots' for real ham

acting. Sublogic's *Flight Simulator II* is very good — if expensive. Beyond's *Lords of Midnight* is worth a look. If you are interested in music then try *Musicalc* from Musicalc UK. Quicksilver's *Doodle* is a good drawing program. If you want a word processor try *Paper Clip* from Batteries included slightly cheaper is *Micro Wordcraft* from Androgenic. Again from Androgenic — *Swift* is a low-cost spreadsheet.

Ghostbusters, Activision, 15 Harley House, Marylebone Road, London NW1; Potty Pigeon, Gremlin Graphics, 22 Carver Street, Sheffield S1; Havoc, Dynavision, PO Box 86, Luton; Summer Games, Epyx, released through Quicksilver, Palmerston Park House, 13 Palmerston Road, Southampton; Impossible Mission, Epyx, released through CBS, Ashbrook House, 3-5 Rathbone Place, London W1; Flight Simulation II, Sublogic, available through The 64 Supplies Company, PO Box 19, Whitstable, Kent; Lords of Midnight, Beyond, Lector Court, 153 Farringdon Road, London EC1; Musicalc, Musicalc UK, The Paradox Group, The Metropolitan, Enfield Road, London N1; Doodle, Quicksilver, Palmerston Park House, 13 Palmerston Road, Southampton; Paperclip, Batteries Included, available through The 64 Supplies Company, PO Box 19, Whitstable, Kent; Woodcraft and Swift, Audiogenic, PO Box 88, Reading, Berks.

BBC

Whereas with the Commodore and the Spectrum it was no easy task deciding on what programs represented the best available on the machine — with the BBC it is absurdly easy.

Elite from Acornsoft is the best games program available on the BBC and rivals anything available on any other machine. In fact *Elite* is to get an advertising campaign on TV all to itself.

The BBC is a fast and powerful machine in many ways (apart from memory) but, perhaps because of the way its serious, educational uses have been stressed in the past, games on the machine have been lacklustre and technically far inferior to those on other machines. Relative to previous BBC software *Elite* represents an enormous leap in sophistication and complexity, relative to games on other machines it's

represented in three dimensions so you can fly around and behind them.

The aim is initially to make a profit but beyond that you must try to move up the ranks by winning battles and outmanoeuvring the enemy.

You buy goods cheap on one planet, sell them at a profit on another. The classic, and most dangerous, example of this principle is with narcotics — these are cheap and freely available on some planets, but illegal and thus worth a fortune on others.

People have been known to cancel holidays and stay up all night playing *Elite*. Acorn even believes that it is selling Electrons to people who buy the machine just to play the Electron version of the game. Need I say more...

Confronted with the above there are few programs in anything like the same league on the BBC, but *Ultimate* has produced its original *Jetpac* for it. It also has a version of

Amstrad MSX and QL

Three machines, well two machines and a design standard for a number of others — which were released this year.

command. Mostly the screen displays your cockpit window as you hurtle through space. Using battle computers, defensive shields and photon torpe-



Inevitably new machines don't get really spectacular software at the beginning. The programmers haven't had the time to get totally familiar with the full range of possibilities particularly for a machine like the QL, based on a relatively unknown processor chip. Nevertheless, it is possible to separate the good from the bad and all the systems now have at least one program that seems to be noticeably better than the rest.

The Amstrad ought to get some excellent software — based on the ageing but fast Z80 with 64K, excellent graphics and reasonable sound the basic material is all there. The first program to really do any sort of justice to the Amstrad is *Codename Mat* produced for Amsoft by Micromega.

Codename Mat is a sophisticated version of the old computer chestnut, *Star Trek* in which you travel the universe seeking out and destroying the invading forces. Sophisticated graphics and various new features have turned what started life as a rather tedious strategy game into a space epic — not *Elite* but excellent fun.

You command your starship and two other fleets, a map shows the sites of planets, moons, baddie forces and your other ships which may be sent to any region by your

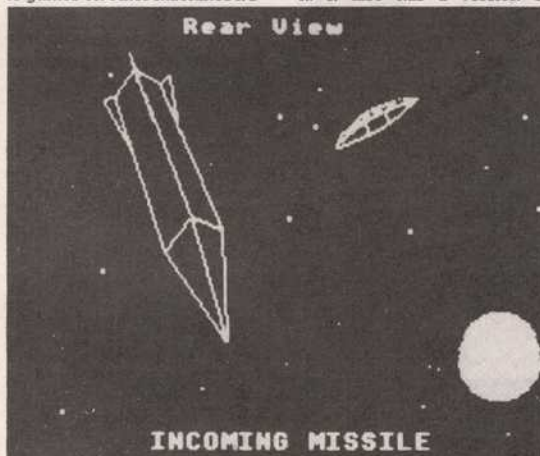
dos you must rid each section of the galaxy of invaders.

The game is partly shoot 'em up partly flight simulation, partly strategy. The illusion of hurtling through space is well done with an occasional passing meteor for extra realism. A compelling game that can take hours to play. Others for the Amstrad — if you want an adventure try the *Nemesis Arnold* programs.

There are a number of companies working on MSX material but as yet, perhaps because not enough machines have yet been sold, there is little that is genuinely impressive. One exception is Konami's *Track and Field* version known as *Hyper Olympics*. This is a near perfect recreation of the slot-machine original — unsurprising really since Konami were responsible for the original.

The game, ideal for an Olympic year involves putting a little man through various Olympic events, various lengths of race, pole vaulting, hammer throwing, hurdles and so on. The detail on the graphics is remarkable and the way the machine controls have been adapted to test a different skill at each event is ingenious. Many a computer is likely to have two of its keys battered to

Continued over the page



Elite from Acornsoft

a smaller, but still significant, step forward.

Elite is the space game to end all space games, it has everything — journeys through space, docking, attack sequences, trading in legal and illegal goods, space pirates, hyperspace, short and long-range scanners, other planets, space stations meteors, etc. All objects are represented in a form of vector graphics, ie, they are constructed in outline only but, and this is 40% of the game, they are

Scrabble which plays a pretty mean game from Leisure Genius. Watch out too for Island Logic's excellent music program, *The Music System*. If you need word a processor try the old standard *Wordwise*.

Elite, Acornsoft, 104 Hills Road, Cambridge; *The Music System*, Island Logic, 22 St Peters Square, London W6; *Jet Pac*, *Ultimate*, The Green, Ashby-de-la-Zouch, Leicestershire; *Scrabble*, Leisure Genius, 3 Montagu Row, London W1; *Wordwise*, Computer Concepts, Gaddesden Place, Hemel Hempstead, Herts.

Xmas soft hits

bits by over-eager contestants in the 400 metres.

And what of the QL, Sir Clive's technically advanced but controversial new machine? For a whole variety of reasons software has been exceptionally slow in coming through — microdrive, unfamiliar processor, production delays, doubts over market, etc.

In fact, apart from the Psion packages which come with the machine there is almost nothing currently available that can be recommended.

The main exception to the above is Psion's Chess program for the machine. Not only has the program beaten dedicated chess machines in tournaments, not only does it have a wide variety of playing options but, most spectacularly of all, the game is represented in 3D.

Your perspective on the board is such that the opponent's pieces appear to be further away — edge on, instead of viewed from above, the norm up to now. The illusion of pieces moving behind and in front of one each other is astonishing and reveals just what the machine is capable of given programming effort. There are now about four assembler packages available for the QL so we should see more programs next year.

Codename Mat, Micromega, 230-236 Lavender Hill, London SW11; **Trial of Arnold Blackwood and Arnold Goes to Somewhere Else**, Nemesis, 10 Carlow Road, Ringshead, Kettering, Northants; **Hyper Olympics**, Konami, released through Micro Peripherals, 69 The Street, Basing, Basingstoke, Hants; **QL Chess**, Sinclair Research, Stanhope Road, Camberley, Surrey.

Dragon and Oric

Two machines that suffered major set-backs this year were Dragon and Oric. Dragon Data collapsed and future development of either the Dragon 32 or 64 now

looks very doubtful. Machines ended up being sold off very cheaply in the shops.

However, almost at the same time as the collapse occurred the general level of Dragon

software seemed to improve significantly — mixed-mode graphics and sprites took the place of the green screen and poor quality block graphics. One game in particular, was universally declared best ever on the dragon — Wintsoft's follow up to the *Ring of Darkness* called *Return of the Ring*.

Return of the Ring is a machine-code adventure with complex sentence analysis, hires pictures and 3D sequences. The computer even gets to control its own characters. As in *Dungeons and Dragons* style games, you may define your own character allotting points in different amounts to different qualities before you begin the game. How intelligent, strong, lucky, etc, you are is a balance you decide.

Parts of the game involve buying and trading, others are more like text adventures — something for every sort of adventurer in fact. If more programs had been of this quality earlier or had been produced sooner for the Dragon, its eventual fate might have been different.

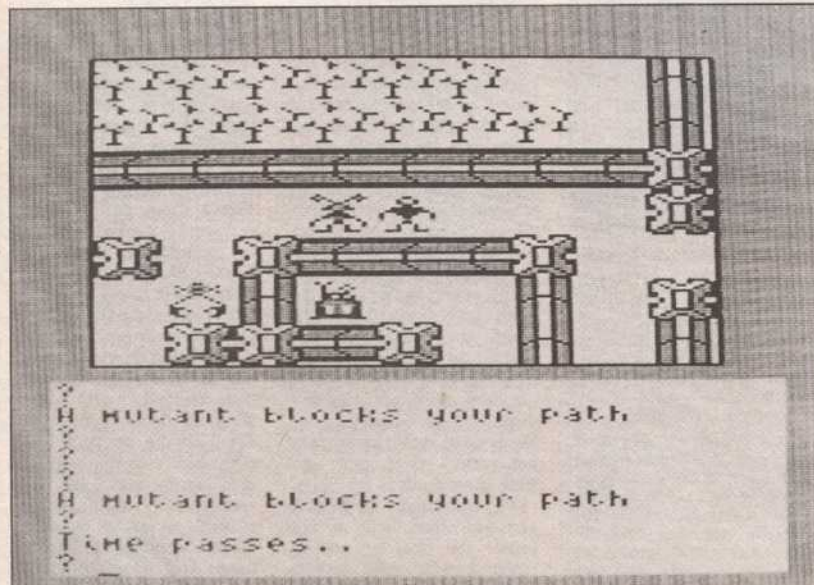
The Oric didn't actually die

this year but all the signs of market failure are there — the Oric is currently on sale at highly reduced prices in many shops and there is little really good software available. For those who have the machine good news comes in the form of a company that is importing some of the best French software for the machine. The Oric was considerably more successful in France than it has been in the UK.

Of this new software one of the most interesting 'new' titles is *Tyrann* by No Man's Land. Like *Return of the Ring* this game takes some of the basic *Dungeons and Dragons* concepts and adds to them. You can choose to create one of four general types of character, Warrior, Thief, Druid or Magician. Each type has different strengths and weaknesses and as you play the game so the nature of the character will develop — gaining experience from fights, etc. You control six characters in all, each defined from the choices above.

You explore a village, starting point for your quest, each character may be moved in turn, characters may pass objects to one another, there are spells to be cast and secret doors to be opened. The screen display shows a simple 3D line drawing of your movement among the streets and through the doors of the village. Through solving problems and winning fights, characters may move up to a new level whereupon they are provided with new, more potent spells. When your team has reached an average of Level II then the main part of the adventure may be loaded. This contains more objects more mazes, more battles, etc. Although technically quite simple, *Tyrann* is nevertheless a compulsive adventure that should keep you going for weeks.

Return of the Ring, Wintsoft, 30 Uplands Park Road, Enfield, Middx; *Tyrann*, No Man's Land, High Tech Units 1 and 2, Conlon Developments, Watery Lane, Darwen Lane, Darwen, Lancs.



Return of the Ring from Wintsoft

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Words of one syllable

Roger Barker takes the bother out of using microdrives on the Spectrum 48K

Microdrives have made loading Spectrum programs a very much quicker process; however, they are marred by the horrendous syntax of the Microdrive commands. For the uninitiated, the command to load a program called "Prog" from Microdrive 1 is: Load "M";1;"Prog". I decided to write a command so that programs could be loaded simply by entering "*" followed by the program name; eg "Prog".

The routine works by changing the

address held in the system variable Vector, so that any command causing an error is first checked by the coding starting at address 65439. If the command does not start with an asterisk then it is ignored, if it does then it is processed.

The name of the program after the asterisk is extracted and stored, then the command line is extended to hold the full Microdrive Load command, although this is invisible to the user. An assembler listing is given for those who wish to study this

technique in more detail. The whole thing takes just 97 bytes.

First key in the listing for the loader program and run it to set up the machine code and store it on Microdrive as "st". Next key in the "Star" program — if you leave the Rem's out it is only one line — and save it with the command Save "M";1;"star" Line 10. To make the command available simply load "star". The command will remain installed until you switch off your Spectrum, and any other programs from Microdrive 1 can be loaded with just an asterisk and their name.

Because the coding resides in Ram there will always be a slight risk of over-writing it; what a pity that Sinclair have not put a few similar commands in the Interface 1 Rom — which has about 300 bytes of free space.

Star Program

```
1 REM *** "STAR" PROGRAM
2 REM ***
10 CLEAR 65438: LOAD "*"M";1;"
"CODE": POKE 23735,159: POKE 23
736,255
```

M/C Loader

```
10 REM *** M/C CODE LOADER
20 REM ***
30 CLEAR 65438
40 LET TOTAL=0
50 FOR N=1 TO 97
60 READ BYTE
70 POKE (65438+N),BYTE
80 LET TOTAL=TOTAL+BYTE
90 NEXT N
100 IF TOTAL<>2666 THEN PRINT "
ERROR IN DATA STATEMENTS." : STOP
110 SAVE "*"M";1;"st"CODE 65439,
97
120 DATA 215,24,0,254,42,194,24
5,1,33,243
130 DATA 255,6,10,229,54,32,35,
15,251,225
140 DATA 6,11,229,197,215,32,0,
193,225,254
150 DATA 53,40,29,254,13,40,7,5
40,22
160 DATA 119,35,24,234,237,91,9
7,92,27,27
170 DATA 33,227,255,1,29,0,237,
175,237,83
180 DATA 97,92,205,180,5,195,19
5,56,239
190 DATA 42,34,77,34,59,49,14,0
0,1
200 DATA 0,0,59,34,32,32,32,32,
32,32
210 DATA 32,32,32,32,34,13,128
```

Assembly Listing

```
*HISOFT GEN53 ASSEMBLER*
Copyright © HISOFT 1983
All rights reserved
```

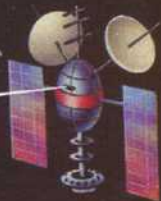
Pass 1 errors: 00

```
FF9F 10 *C- ORG 65439
5500 200 WORKS 0 ARMO #054
5501 300 GETCHR ARMO #054
5502 400 ERRR#5 ARMO #054
5503 500 NXTCHR ARMO #054
5504 600 END1 ARMO #054
5505 700 START ARMO #054
5506 800 RST 16 ARMO #054
5507 900 CP "*" ARMO #054
5508 1000 DEFM GETCHR ARMO #054
5509 1100 JP NZ,ERR#6 ARMO #054
5510 1200 LD HL,NAME+1 ARMO #054
5511 1300 LD B,13 ARMO #054
5512 1400 PUSH HL ARMO #054
5513 1500 ST1 LD (HL),"" ARMO #054
5514 1600 INC HL ARMO #054
5515 1700 DJNZ ST1 ARMO #054
5516 1800 POP HL ARMO #054
5517 1900 LD B,11 ARMO #054
5518 2000 ST2 PUSH HL ARMO #054
5519 2100 PUSH BC ARMO #054
5520 2200 RST 16 ARMO #054
5521 2300 DEFM NXTCHR ARMO #054
5522 2400 POP HL ARMO #054
5523 2500 CP "" ARMO #054
5524 2600 JR Z,ST4 ARMO #054
5525 2700 CP 13 ARMO #054
5526 2800 JR Z,ST3 ARMO #054
5527 2900 DEC B ARMO #054
5528 3000 JR Z,ST4 ARMO #054
5529 3100 LD (HL),A ARMO #054
5530 3200 INC HL ARMO #054
5531 3300 JR ST2 ARMO #054
5532 3400 LD DE,(WORKSP) ARMO #054
5533 3500 ST3 ARMO #054
5534 3600 DEC DE ARMO #054
5535 3700 DEC DE ARMO #054
5536 3800 LD HL,COMMND ARMO #054
5537 3900 LD BC,29 ARMO #054
5538 4000 LDIR ARMO #054
5539 4100 LD (WORKSP),D ARMO #054
5540 4200 ST4 CALL ST_END ARMO #054
5541 4300 JP END1 ARMO #054
5542 4400 COMMND DEFB #3A,DEF ARMO #054
5543 4500 DEFM "*"M";1 ARMO #054
5544 4600 DEFB #0E,#00,#0 ARMO #054
5545 4700 NAME DEFM "" ARMO #054
5546 4800 DEFB #0D,#00 ARMO #054
```

Pass 2 errors: 00

Table used: 162 from 300

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Audio visual

Got a video recorder and a BBC B? Then try Video Indexer by A J Carter

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This program generates an index for your cassettes and also calculates how much time you have left on the tape. The program asks for the length of the cassette, the number of programs currently on the cassette, and the title and length of each of the programs. It then generates a test-card type background and then prints the index on the screen.

To get this index on to the video cassette, you have to take the aerial lead out of the socket on the back of the video and plug the TV lead from the computer into the same socket. (It would be more convenient to do this before you run the program.) If you plug your computer into a video and find that you do not get a picture, do not panic! This just

means that you need to tune a channel on your video to suit your own computer. Mine seemed to be very close to Channel 35.

Once you have got a clear picture of the copyright message, Load the computer with the indexer program, then place the video cassette in the video recorder. Check that the video cassette has been fully rewound to the beginning.

Run the computer program and enter the data as required, and when prompted by the program, start the video recorder recording. Leave it recording until the index has been on the screen long enough for you to have read it at least twice, then stop the video recording.

It might be wise not to index existing cassettes unless you are sure there is enough tape at the beginning or you do not mind losing some of the credits at the start of the first program.

Program Notes

Line No

10 Calls the data input procedure.

- 20-30 Sets the 16 colour display mode and calls the display procedure.
60 Declares the specified variables as 'Local' to the display procedure.
70 Turns the text cursor off.
80-110 Draws first band of colour.
120-150 Draws second band of colour.
160-190 Draws third band of colour.
200-230 Draws fourth band of colour.
240-270 Draws fifth band of colour.
280-310 Draws sixth band of colour.
320-380 Outputs the contents of the cassette, the length of the cassette and the recording time left on the cassette.
390 Stops the program from finishing until the video recorder has been stopped.
410-430 Beginning of the data input procedure. Declares variables 'Local' to this procedure.
440-450 Outputs prompts and inputs the length of the video cassette and the number of programs on the cassette.
460 Reserves memory space for the titles of the programs in the form of a single dimension array.
470-540 Inputs the titles of the programs on the cassette and calculates the free recording time in mins.
550-600 This is the data verification loop and if data fails the data input procedure is called recursively.
610-630 This section synchronises the computer display to the video recorder.

Variables

Simple: L% the length of the video cassette.
PL% the length of a program.

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TPL% the total length of all the programs. (This is incremented inside the data input loop.)
 P% the number of programs currently on the cassette. (Used to control the extent of the data input/output loops.)

LR% contains the recording time left on the video cassette.
 Control: I% is used throughout the program as a general looping variable, and is also used to control the X-coordinates of the background draw function.

String: V\$ this contains the response from the verification routine and is acted upon depending whether it is y or n.
 Array: T\$ this contains the titles of the programs on the cassette.

```

1 REM *****
2 REM *Ramp Software (c)1984 *
3 REM *****
10 PROCinput_data
20 MDE2
30 PROCdisplay
40 END
50 DEFFROCdisplay
60 LOCAL I%
70 VDU23,1,0;0;0;0
80 FORI%=0TO213
90   PLOT69,I%,0
100  GCLO,5:DRAW I%,1279
110  NEXTI%
120  FORI%=214TO427
130   PLOT69,I%,0
140   GCLO,6:DRAW I%,1279
150   NEXTI%
160  FORI%=428TO641
170   PLOT69,I%,0
180   GCLO,2:DRAW I%,1279
190   NEXTI%
200  FORI%=642TO855
210   PLOT69,I%,0
220   GCLO,4:DRAW I%,1279
230   NEXTI%
240  FORI%=856TO1069
250   PLOT69,I%,0
260   GCLO,7:DRAW I%,1279
270   NEXTI%
280  FORI%=1070TO1280
290   PLOT69,I%,0
300   GCLO,1:DRAW I%,1279
310   NEXTI%
320  PRINT TAB(6,0);"CONTENTS"
330  PRINT TAB(0,2);":":T$(1),
340  FOR I%=2 TO P%
350   PRINT TAB(0,I%+2);I%";":T$(I%)
360   NEXT I%
370  PRINT TAB(1,29);"Len. left ":LR%; " mins"
380  PRINTTAB(2,26);"Length ":L%; " mins."
390  REPEAT UNTIL GET=32
400  ENDFROC
410  DEFFROCinput_data
420  LOCAL I%,V$,PL%
430  CLS
440  PRINT TAB(0,2);"What is the length of the
      Cassette, in (mins)":INPUT L%
450  PRINT TAB(0,4);"How many programs are on this
      cassette ":INPUT P%
460  DIM T$(P%)
470  PRINT"Type the titles & lengths (mins) of the
      programs on the cassette."
480  FOR I%=1 TO P%
490   INPUT T$(I%)
500   INPUT PL%
510   TPL%=TPL%+PL%
520   NEXT I%
530   CLS
540   LR%=L%-TPL%
550   PRINT TAB(8,0);"CONTENTS"
560   FOR I%=1 TO P%
570    PRINT I%";":":T$(I%)
580    NEXT I%
590   PRINT "Is this correct. (Y/N)":INPUT V$
600   IF V$="N" OR V$="n" THEN PROCinput_data
610   PRINT TAB(2,26);"Hit <RETURN> and start
      video recording."
620   REPEAT UNTIL GET=13
630   ENDFROC
    
```

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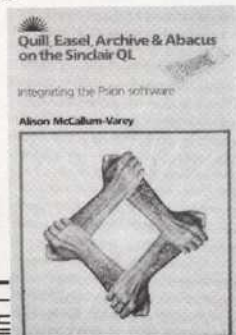
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Number of columns	...85
Tube90" 14" (34 cm "V") self-converging colour tube
Video Bandwidth12 MHz
Shadowmask pitch0.63 mm
Direct RGB input5 volt pp into 390 ohms
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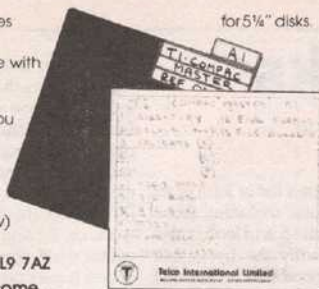
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A bug in the works

The mystery of the unexplained crashes unravelled and solved by Andy Pennell

When writing machine-code on any machine, the QL included, it's a real nuisance when you call it and the machine just locks, with no indication of what is wrong. Unfortunately, on the current QLs this can happen even if you are a perfect programmer, as there is a bug in the Rom that can cause a *Call* command to crash the machine! However, never fear, as this little 100-odd byte machine-code routine corrects it, so that *Call* will always work as it should.

Enter Listing 1, Save it in case of errors, then Run it, and if you've got the data right then the bug is corrected. After this you can New, and it will remain, the only thing that can remove it being a Reset.

How, you may ask, can a bug in the Rom be corrected from software? Well, as you

may know, the QL keeps a list in Ram of all procedures and functions, including those in the Rom. What's required is to look in this table for *Call*, and modify the bytes that define where the procedure is, so that instead of using the erroneous routine in the Rom, the improved routine supplied is used.

Listing 2 is the assembler listing, which starts by looking in the name table for any procedures of length 4, which includes *Call*. For each one found, the following bytes are checked, and if it is indeed *Call* then the long word is re-defined. If it is not, then the whole table is scanned, and if for any perverse reason *Call* is not found then an error will occur.

The problem with the Rom routine is that Word size addressing has been used, which is fine until you have a large Basic

program in memory of over around 25K, then it will crash. The new *Call* procedure is much the same as the old one, except that Long Word addressing is used, and that the parameters routine is accessed so that it works on all modern QL Roms. The bug exists on all QLs to date, including the latest JM version, though this correction will only work on JM and AH versions, because the vector used does not exist on earlier ones. When it gets corrected, this patch will still work, although it will be redundant.

One bug that QL owners may be interested in is the *Gosub* one — if you have a *Gosub* in a short-form *For* loop the *Gosub* will never be called until the loop is about to finish. As *Gosub* is not actually a procedure, it does not have its routine in Ram, so the bug can't be corrected until the next release of the Rom.

If you don't understand about QDOS or the way SuperBasic works, then look out for my forthcoming book *The QDOS Companion* available from Sunshine Books towards the end of the year.

Listing 1

```
1000 REMark *****
1010 REMark * CALL bug correction *
1020 REMark *(c) Andrew Pennell 1984*
1030 REMark *****
1040 p=RESPR(120)1050 t=0
1060 RESTORE 11301070 FOR i=0 TO 115
1080 READ a:POKE i+p,a:t=t+a1090 NEXT i
1100 IF t<>10416 THEN PRINT#0:"Data
error":STOP
1110 PRINT"Code loaded, CALL bug
corrected"
1120 CALL p
1130 DATA 32,110,0,24,50,118,136,2
```

```
1140 DATA 211,238,0,32,12,54,0,4
1150 DATA 144,0,103,0,0,14,80,136
1160 DATA 177,238,0,28,99,230,112,249
1170 DATA 78,117,12,54,0,67,144,1
1180 DATA 102,0,255,236,12,54,0,65
1190 DATA 144,2,102,0,255,226,12,54
1200 DATA 0,76,144,3,102,0,255,216
1210 DATA 12,54,0,76,144,4,102,0
1220 DATA 255,206,65,250,0,10,45,136
1230 DATA 136,4,66,128,78,117,56,120
1240 DATA 1,24,78,148,102,20,229,139
1250 DATA 103,14,215,174,0,88,47,54
1260 DATA 152,0,76,246,63,254,152,4
1270 DATA 112,241,78,117
```

Listing 2

```
*****
* CALL procedure bug correction *
*
* (c) Andrew Pennell 1984
*****

=0018          bv.ntbas equ $18
=001C          bv.nto  equ $1c
=0020          bv.nibas equ $20
=0058          bv.rip  equ $58

206E 0018          .          move.l bv.ntbas(a6),a0          start
3276 8002          loop      move.w 2(a6,a0),a1          name list
03EE 0020          .          adda.l bv.nibas(a6),a1
0C36 0024 9000          .          cmpi.b #4,0(a6,a1,w)          4 long?
6700 000E          .          beq coodbe          could be CALL
5088          next      addq.l #8,a0          else try next
B1EE 001C          .          cmpa.l bv.ntp(a6),a0
63E6          .          b1.s loop          if more
70F9          .          moveq #-7,d0          else 'not found'
4E75          .          rts
0C36 0043 9001          coodbe  cmpi.b #'0',1(a6,a1,w)          is it CALL?
6600 FFEC          .          bne next
```

```
0036 0041 9002      cmpi.b #'A'.2(a6,a1.w)
6600 FFE2           bne next
0036 0040 9003      cmpi.b #'L'.3(a6,a1.w)
6600 FFD8           bne next
0036 004C 9004      cmpi.b #'L'.4(a6,a1.w)
6600 FFCE           bne next
```

* it is so redefine it

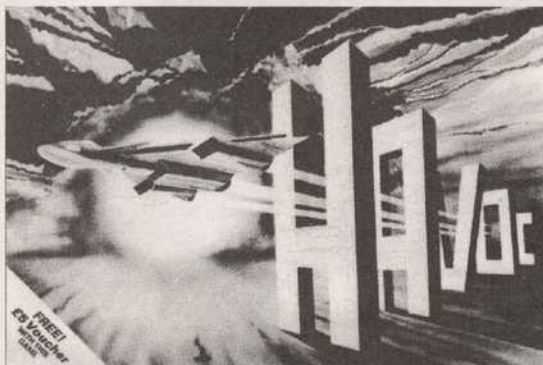
```
41FA 000A          lea newcall(pc),a0
2D80 8004          move.l a0,4(a6,a0.l)      store new address
4280              clr.l d0                 no error
4E75              rts                    back to BASIC
```

* new CALL procedure

```
3878 0110          newcall move.w #118,a4
4E74              jsr (a4)                get parameters
6614              bne.s exit              if error
E58B              isl.l #2,d3
670E              beq.s badparam         if no params
D7AE 0058          add.l d3,bv.rip(a6)     redo maths stack
```

* these next two are wrong in the ROM

```
2F36 9800          move.l 0(a6,a1.l),-(a7)  start address
4CF6 3FFE 9804      movem.l 4(a6,a1.l),a0-a5/d1-d7 and registers
70F1              badparam moveq #-15,d0  ready to go to it
4E75              exit                    rts                    start it (or quit)
```



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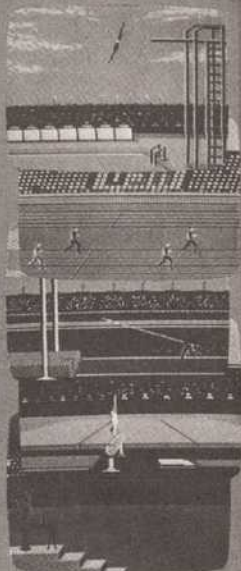
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```

399 DATA 0C,0C,0C,0C,03,30,00,0C,00,0C,00,0C,00,00,00,00,00,00,00,00,
00,00,00
390 DATA 0F,FC,00,0C,00,30,00,0C,03,00,0C,00,0F,FC,00,00,00,00,00,00,
00,00,00
391 DATA 3F,FC,3C,00,3C,00,3C,00,3C,00,3C,00,3F,FC,00,00,00,00,00,00,
00,00,00
392 DATA 00,00,30,00,0C,00,03,00,0C,00,00,30,00,0C,00,00,00,00,00,
00,00,00
393 DATA 0F,FC,00,3C,00,3C,00,3C,00,3C,00,3C,0F,FC,00,00,00,00,00,00,
00,00,00
394 DATA 00,00,03,FO,0C,0C,00,0C,00,0C,00,0C,00,00,00,00,00,00,00,
00,00,00
395 DATA 00,00,03,00,0C,00,3F,FC,0C,00,03,00,00,00,00,00,00,00,00,00,
00,00,00
396 DATA 00,00,03,00,03,00,03,00,30,30,0F,CO,03,00,00,00,00,00,00,00,
00,00,00
397 DATA 00,00,00,00,03,00,0C,30,0C,30,0C,03,0C,00,00,00,00,00,00,00,
00,00,00
398 DATA 0C,00,0C,00,0F,CO,0C,30,0C,30,0C,30,0F,CO,00,00,00,00,00,00,
00,00,00
399 DATA 00,00,00,00,03,0C,0C,30,0C,00,0C,30,03,CO,00,00,00,00,00,00,
00,00,00
400 DATA 00,30,00,30,03,FO,0C,30,0C,30,03,FO,00,00,00,00,00,00,00,00,
00,00,00
401 DATA 00,00,00,00,03,0C,0C,30,0F,CO,0C,30,03,CO,00,00,00,00,00,00,
00,00,00
402 DATA 03,0C,0C,30,0C,00,0F,CO,0C,00,0C,00,00,00,00,00,00,00,00,00,
00,00,00
403 DATA 00,00,00,00,03,0C,0C,30,0C,30,03,FO,00,30,00,30,0C,03,CO,00,
00,00,00
404 DATA 0C,00,0C,00,0F,CO,0C,30,0C,30,0C,30,00,00,00,00,00,00,00,00,
00,00,00
405 DATA 00,00,03,00,00,00,03,00,03,00,03,00,03,00,00,00,00,00,00,00,
00,00,00

```

```

406 DATA 00,00,00,30,00,00,00,30,00,30,00,30,00,30,00,30,00,30,0C,30,03,
CO,00,00
407 DATA 0C,00,0C,00,0C,30,0C,CO,0F,00,0C,CO,0C,30,00,00,00,00,00,00,00,
00,00,00
408 DATA 0C,00,0C,00,0C,00,0C,00,00,0C,00,00,00,00,00,00,00,00,00,00,
00,00,00
409 DATA 00,00,00,00,0F,3C,30,C3,30,C3,30,C3,30,C3,00,00,00,00,00,00,00,
00,00,00
410 DATA 00,00,00,00,03,0C,0C,30,0C,30,0C,30,0C,30,00,00,00,00,00,00,
00,00,00
411 DATA 00,00,00,00,03,0C,0C,30,0C,30,0C,30,03,CO,00,00,00,00,00,00,
00,00,00
412 DATA 00,00,00,00,03,0C,0C,30,0C,30,0C,30,0F,CO,0C,00,00,00,00,0C,
00,00,00
413 DATA 00,00,00,00,03,0C,0C,30,0C,30,0C,30,03,FO,00,00,00,00,3C,
30,00,00
414 DATA 00,00,00,00,03,0C,0C,30,0C,00,0C,00,0C,00,00,00,00,00,00,00,
00,00,00
415 DATA 00,00,00,00,03,0C,0C,30,03,CO,0C,30,03,CO,00,00,00,00,00,00,
00,00,00
416 DATA 0C,00,0C,00,0F,CO,0C,00,0C,00,0C,30,03,CO,00,00,00,00,00,00,
00,00,00
417 DATA 00,00,00,00,0C,30,0C,30,0C,30,0C,30,03,CE,00,00,00,00,00,00,
00,00,00
418 DATA 00,00,00,00,0C,30,0C,30,0C,30,0C,30,03,CO,00,00,00,00,00,00,
00,00,00
419 DATA 00,00,00,00,30,C3,30,C3,30,C3,30,C3,0F,3C,00,00,00,00,00,00,00,
00,00,00
420 DATA 00,00,00,00,0C,30,0C,30,03,CO,0C,30,0C,30,00,00,00,00,00,00,
00,00,00
421 DATA 00,00,00,00,0C,30,0C,30,0C,30,0C,30,03,FO,00,30,00,30,0C,30,03,
CO,00,00
422 DATA 00,00,00,00,0F,FO,00,30,00,0C,03,00,0F,FO,00,00,00,00,00,00,00,
00,00,00
423 DATA **

```

```

100 ' LISTING 6
110 '
120 'Prints out the full character set.
130 '
140 CLEAR 200,&H72BF
150 DEFUSR0=&H7E20
160 PMODE3:PCLS:SCREEN1,0
170 X=0:Y=2
180 FOR A=32 TO 122

```

```

190 A$=CHR$(A)
200 GOSUB 230
210 NEXT
220 GOTO 220
230 A$=A$+CHR$(13)
240 POKE &H7E22,X:POKE &H7E23,Y
250 N=USR0 (VARPTR (A$))
260 X=X+1: IF X>15 THEN X=0:Y=Y+1
270 A$="":RETURN

```

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The electronic banker

This week, *Banker*, a program taken from David Lawrence's new book on the C16

The object of this program is to allow the user to keep a clear and continuously updated record of a single bank account, the names of payments, their date and the amount, including the ability to specify not only single payments, but recurring expenses or receipts, no matter how irregular the period. The program is designed to deal with an account for the period of one calendar year, though if a great many transactions are involved, limitations of memory may mean that you will need to start afresh with a new record every few months.

Program Notes

Line 10060: The array A\$ will be used to store the names of payments and special string, explained later, which records the months in which the particular payment is made. The numerical array A will store the amount of each payment and the day of the month on which it is made. The setting of A(0,1) to 999, an impossible day of the month, is used by the later sorting routine to detect the end of the file.

Lines 10080-10130: This loop reads the names of the months of the year into the array MOS

Lines 11000-11200: Standard menu module.

Lines 12030 and 12260: The overall loop which allows the user to confirm or reject the information input.

Line 12060: The program clearly needs to know whether the item is to be paid out or received, debit or credit. This is recorded in the form of the variable CD (Credit/Debit).

Lines 12090-12220: The months in which the payment is to be made are input in the form of a string of two digit numbers, with no separation between them. The For loop beginning at line 12130 scans the string input to make sure that it does yield a series of sensible month values and informs the user if an error has been made.

Line 12220: At this point, the information input has been checked and confirmed by the user, so the variable recording the number of items in the file, PA, is incremen-

ted by one.

Lines 12290-12360: The purpose of this loop is to place the new item into correct day order within the file. Rather than make duplicate copies of payments which fall in more than one month, the system adopted is to store all of the entries once only, in day order. When inserting the new item, the loop from 12290 to 12350 starts with the highest day value (which is the dummy 999 inserted in the initialisation module) and works its way down until it finds a payment with a day value less than the value of S, the day value of the item just input by the user. If it does not find the correct position it moves the item it has just examined up one place, in other words, as it scans down the file, moving a spare line with it. When the correct position is found, the spare line is already in the correct position. As a final action, the value of J, which records the position of the first entry found which has a day of payment less than S, is increased by one to point to the spare line.

Lines 12370-12410: The next task is to translate the list of months input into a format which can easily be scanned by later parts of the program. The simple expedient adopted is to use a string of 12 zeros, recording months in which the payment is not to be made, and then to use a loop to change a zero to one, for any months in

```

                                august
balance c/f: 456.00          item  total
1  salary                  333.00  789.00
15 mortgage                225.00  564.00
   gas                     150.00  414.00

any key to continue:

10000 REM*****
10010 REM VARIABLES
10020 REM*****
10030 SCNCLR
10040 DO WHILE IN=0
10050 IN=1: CR$=CHR$(13): S$="vvvvv"
10060 DIM A$(99,1),A(99,1):A(0,1)=999
10070 RESTORE
10080 DIM MOS(11)
10090 FOR I=0 TO 11
10100 READ A$:MOS(I)=A$
10110 NEXT I
10120 DATA JANUARY,FEBRUARY,MARCH,APRIL,MAY,J
UNE,JULY,AUGUST,SEPTEMBER,OCTOBER
10130 DATA NOVEMBER,DECEMBER
10140 INPUT "DO YOU WISH TO LOAD FROM DISK (Y
/N)";Q$
10150 IF Q$="Y" THEN GOSUB 15150
10160 LOOP
11000 REM*****
11010 REM MENU
11020 REM*****
11030 Z=0: DO UNTIL Z=5
11040 COLOR 0,8: SCNCLR: CHAR,16,1,"
[RVSON] [REDBANKER] [GRN]": PRINT
11050 PRINT "[CD][CD][BLK] COMMANDS AVAILABLE:
E:"
11060 PRINT "[CD][GRN]vvvvv1) NEW PAYMENTS"
11070 PRINT "[CD]vvvvv2) EXAMINE/DELETE PAYMEN
TS"
11080 PRINT "[CD]vvvvv3) PRINT STATEMENT"
11090 PRINT "[CD]vvvvv4) SAVE FILE"
11100 PRINT "[CD]vvvvv5) STOP"
11110 INPUT "[CD][CD][BLK] WHICH DO YOU REQUIRE:
";Z:PRINT " ";
11120 DO WHILE PA=0 AND (Z=2 OR Z=3)
11130 PRINT "[CD][CD][CD][CD][CD][CR][CR][CR]
[CR][CR][CR]SORRY, NO DATA YET.": GETKEY A$
11140 Z=8
11150 EXIT: LOOP
11160 ON Z GOSUB 12000,13000,14000,15000
11170 LOOP
11180 SCNCLR: CHAR,16,10,"[RVSON] [REDBANKER]
R"
11190 CHAR,10,12,"[RVSON] [BLK] CLOSED FOR BUSI
NESS"
11200 END
12000 REM*****
12010 REM ENTER NEW ITEMS
12020 REM*****
12040 SCNCLR: CHAR,16,1,"[RED][RVSON] NEW IT
EM [GRN] [RVSON] OFF": PRINT
12050 PRINT "[CD][CD]vvvvv1) CREDIT: PRINT "v
vvvvv2) DEBIT"
12060 INPUT "[CD][BLK]vvhich do you require:
";CD:CD=CD-1
12070 INPUT "[CD][CD][GRN]vvhame of payment:
";
Q$
12080 INPUT "[CD]vvh amount: ";Q
12090 EN=1: DO UNTIL EN=0
12100 EN=0
12110 INPUT "[CD]vvh months (E.G. 081040710): ";R$
12120 PRINT "[CU]";
12130 FOR I=1 TO LEN(R$) STEP 2
12140 M=VAL(MID$(R$,I,2))-1
12150 DO UNTIL M=>0 AND M<=11
12160 PRINT: PRINT "[CU]INVALID MONTH INPUT v
vvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvv
vvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvv
vvvvvvvvvv"
12170 EN=1
12180 GETKEY A$
12190 EXIT: LOOP
12200 IF EN=0 THEN PRINT MOS(M);"/";
12210 NEXT I
12220 LOOP
12230 PRINT "vvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvv
vvvvvvvvvv"
12240 INPUT "[CD]vvh day of payment: ";S
12250 INPUT "[CD][CD][RED]ARE THESE CORRECT (
Y/N)";T$:
12260 IF T$="Y" THEN RETURN
12270 PA=PA+1
12280 J=PA-1
12290 DO WHILE S<A(J,1)
12300 FOR K=0 TO 1

```


which a payment is to be made. Thus, in the case of our quarterly example above, the eventual string would read 010010010010.

Lines 12420-12450: The new information is placed into the main arrays. If the variable CD records that the item is a debit, the amount is multiplied by minus one, making it negative.

Line 14030: The variable Sum will be used to hold the balance in the account — both the balance carried forward and the balance after each item.

Lines 14080-14130: Provided that the statement is not for the first month, in which case there is no balance to be carried forward, these two loops scan the whole of the payments list once for each month which precedes the month of the statement. In this way, each payment is examined to see whether it is made in any of the preceding months, in which case the appropriate

amount is added to the total in Sum by the end of the two loops, Sum contains the full total of any changes in the balance since the beginning of the year.

Lines 14160-14170: One thing to note about the printing of Sum at this point is that if the amount is negative, Line 14060 changes the print colour to red. You will find the same techniques used frequently in the lines that follow. Note also the use of the Print Using command, allowing us to impose a standard format on the number to be printed and ensuring that the statement will be neatly presented, with all the decimal points aligned.

Lines 14190-14310: This loop scans through the complete list of payments, while the Do loop at 14200 and 14300 selects only those which have a 1 in the relevant position of the string recording the months in which the payment is to be made. When a payment

is to be made in the month specified for the statement, the loop prints out the day, A(I,1), the name, A\$(I,0), the amount, A(I,0), and finally the balance the payment produces, obtained by adding the amount to the previous total in Sum. The screen is maintained in orderly columns, despite the fact that figures may vary in length, by the use of Tab, which starts items at a standard position on the screen, and Print Using. **Lines 15000-15260:** Data Files routine. The program is disc based, but can be converted to tape filing by changing Line 15090 to Open 1,1,1,FI\$, then 15080 to FI\$ = FI\$ + ",S,W" This program is an edited abstract from *The Working Commodore C16* by David Lawrence (published by Sunshine Books at £6.95). Greater detail of the program itself and the principles it embodies can be found within its pages.

```

12310 A$(J+1,K)=A$(J,K)
12320 A(J+1,K)=A(J,K)
12330 NEXT K
12340 J=J-1 : IF J<0 THEN EXIT
12350 LOOP
12360 J=J+1
12370 A$(J,1)="000000000000"
12380 FOR I=1 TO LEN(A$(J,1)) STEP 2
12390 M=VAL(MID$(A$(J,1),I,2))
12400 A$(J,1)=LEFT$(A$(J,1),M-1)+"1"+RIGHT$(A$(J,1),12-M)
12410 NEXT I
12420 A$(J,0)=Q$
12430 A(J,0)=0
12440 A(J,1)=S
12450 IF CD=1 THEN A(J,0)=A(J,0)*-1
12460 RETURN
13000 REM*****
13010 REM EXAMINE/DELETE ITEMS
13020 REM*****
13030 FOR I=0 TO PA-1
13040 COLOR 1,1 : SCNCLR
13050 PRINT "[CD]PAYMENT:";A$(I,0)
13060 PRINT "[CD]AMOUNT:";A(I,0)
13070 PRINT "[CD]MONTHS:"
13080 FOR J=1 TO 12
13090 IF MID$(A$(I,1),J,1)="1" THEN PRINT MO$(J-1);"/";
13100 NEXT J : PRINT
13110 PRINT "[CD]DAY*OF*PAYMENT:";A(I,1)
13120 PRINT "[CD][CD][CD][RED][RVS ON]COMMAND S*AVAILABLE:[RVS OFF][BLU]"
13130 PRINT "[CD][RVS ON]RETURN[RVS OFF]v-vNE XT*ITEM":
13140 PRINT "[RVS ON]122Z[RVS OFF]v-v-v-v-vQUIT"
13150 PRINT "[RVS ON]ZERO[RVS OFF]v-v-v-v-vDELET E*ITEM"
13160 Q$="" : INPUT "[CD][GRN]WHICH*DO*YOU*RE QUIRE:";Q$
13170 DO WHILE Q$="0"
13180 FOR J=I TO PA-1
13190 FOR K=0 TO 1
13200 A$(J,K)=A$(J+1,K) : A(J,K)=A(J+1,K)
13210 NEXT K,J
13220 PA=PA-1
13230 EXIT : LOOP
13240 IF Q$="" THEN NEXT I
13250 RETURN
14000 REM*****
14010 REM COMPILE STATEMENT
14020 REM*****
14030 SUM=0
14040 SCNCLR : CHAR,15,1,"[RED]STATEMENT[BLK]" : PRINT
14050 Q=0 : DO UNTIL Q>0 AND Q<13
14060 INPUT "[CD]NUMBER*OF*MONTH*FOR*STATEMEN T:";Q
14070 LOOP
14080 DO WHILE Q<1
14090 FOR J=1 TO 0-1
14100 FOR I=0 TO PA-1
14110 IF MID$(A$(I,1),J,1)="1" THEN SUM=SUM+A(I,0)
14120 NEXT I,J
14130 EXIT : LOOP
14140 SCNCLR : CHAR,15,1,"[RED]" : PRINT MO$(0-1)
14150 PRINT "[CD][BLK]BALANCE*O*C*F*o";
14160 IF SUM<0 THEN PRINT "[RED]";
14170 PRINT USING "#####.###";ABS(SUM)
14180 CHR$(26,3);[GRN][RVS ON]ITEM[CR][CR] [CR]TOTAL[RVS OFF] : PRINT "[CD]"
14190 FOR I=0 TO PA-1
14200 DO WHILE MID$(A$(I,1),0,1)="1"
14210 PRINT "[BLK]"; : PRINT USING "###";A(I,1); : PRINT "v-v-v-v";
14220 IF A(I,0)<0 THEN PRINT "[RED]";
14230 PRINT LEFT$(A$(I,0),15);
14240 PRINT TAB(23);
14250 PRINT USING "#####.###";ABS(A(I,0));
14260 SUM=SUM+A(I,0)
14270 PRINT "v[BLK]";
14280 IF SUM<0 THEN PRINT "[RED]";
14290 PRINT USING "#####.###";ABS(SUM)
14300 EXIT : LOOP
14310 NEXT I
14320 PRINT "[CD]ANY*KEY*vTO*CONTINUE:"
14330 GETKEY A$
14340 RETURN
15000 REM*****
15010 REM DATA FILES
15020 REM*****
15030 Q$="" : DO UNTIL Q$="Y"
15040 INPUT "[CD]NAME*OF*FILE*TO*BE*SAVED:";F I$
15050 PRINT "[CD]FILE*TO*BE*SAVED*IS*FI$
15060 INPUT "[CD]IS*THIS*CORRECT*(Y/N):";Q$
15070 LOOP
15080 FI$="00:"+FI$+",S,W"
15090 OPEN 1,0,2,FI$
15100 PRINT#1,PA
15110 FOR I=0 TO PA-1
15120 PRINT#1,A$(I,0);CR$;A$(I,1);CR$;A(I,0); CR$;A(I,1)
15130 NEXT I
15140 CLOSE 1 : RETURN
15150 Q$="" : DO UNTIL Q$="Y"
15160 INPUT "[CD]NAME*OF*FILE*TO*BE*LOADED:"; F I$
15170 PRINT "[CD]FILE*TO*BE*LOADED*IS*FI$
15180 INPUT "[CD]IS*THIS*CORRECT*(Y/N):";Q$
15190 LOOP
15200 FI$=FI$+",S,R"
15210 OPEN 1,0,2,FI$
15220 INPUT#1,PA
15230 FOR I=0 TO PA-1:INPUT#1,A$(I,0),A$(I,1) ,A(I,0),A(I,1):NEXT
15240 A(PA,1)=999
15250 CLOSE 1
15260 RETURN

```



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WRITTEN AND DIRECTED BY MEL CROUCHER

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Open Forum

We are always actively seeking programs for publication — either for Open Forum, the machine pages or Star Game. When sending in a program for consideration, a clear program listing should be sent, together with, wherever possible, a saved copy on cassette. Documentation — usually not more than 1000 words — should start with a general description of the program, what it does, and then some detail of how the program itself is constructed. We pay very competitive rates, according to the length and nature of the program and the quality of the accompanying documentation.

Colour Demo

on Amstrad

The Amstrad CPC464 supports the use of text and graphics windowing very well.

Here is a very primitive implementation

of same and the listing is therefore short. However it does some justice to the power and versatility of the on board language.

```
1 *****
2 *****
3 **** DRAW DEMO OF COLOURS ****
4 *****
5 *****
10 KEY 130, "space", @len 1, @nk 1, @nk 0, @order 2, @mode 1, @list "CHRG(13)
20 KEY 136, "mode 2", @list "CHRG(13)
30 MODE 0
40 SPEED INK 10, 10
50 FOR u=0 TO 71
60 WINDOW(u, 250, 15-uu, 250, 29-uu)
70 PAPER 0, 15-uu, 15-uu
80 NEXT
90 FOR a=0 TO 15: INK a, RND(2), RND(2): NEXT
100 BORDER RND(2), RND(2)
110 FOR d1=1 TO 200: NEXT
120 FOR a=0 TO 15: INK a, RND(5): FOR d1=1 TO 200: NEXT: NEXT: BORDER RND(2)
130 FOR d1=0 TO 7: FLG(d1): FOR d1=1 TO 1000: NEXT: NEXT
140 LOCATE 9, 10: PRINT "Gauss Delight" FOR d1=1 TO 1000: NEXT
150 CLS: PRINT#, "This is a demo of colours"
160 FOR d1=1 TO 2000: NEXT
170 CLS: PRINT#, "This is another demo of the colours"
180 FOR d1=1 TO 2000: NEXT: d1: CLS
190 FOR a=1 TO 300: STEP 2
200 DEG
210 ORIGIN 100, 100
220 PLOT 150: COS(a), 150: SIN(a), 1
230 DRAW 0, 10, 2: DRAW 10, 0, 0
240 DRAW 100: COS(a/2), 50: SIN(a), RND(5): DRAW 100: SIN(a/2), 100: COS(a/2), 0
250 NEXT
260 FOR u=7 TO 0: STEP -1
270 FOR i=1 TO 8: PRINT #i: NEXT: NEXT
280 PRINT CHR$(2) : GOTO 30
290 ZONE 2: MODE 1: FOR p=1 TO 4: PEN p: FOR a=1 TO 255: PRINT CHR$(1): CHR$(a), : NEXT
NEXT
300 GOTO 30: mode=0
```

Colour Demo
by D Race

Arcade Avenue



High scores

This week some general letters and I was pleased to hear again from the mysterious Ensor from "somewhere in England" (who is that masked man?) whose best at *Full Throttle* is first place on four laps of Silverstone by 32.40 seconds. "I find it helpful to write down the corners so that I know what's coming up and get into the right place; eg, Silverstone R-L-R-L-R-R-L-R. A different sign can be included to indicate whether it needs the use of brakes. I am now concentrating on the Donning-

ton circuit, but so far I have only come seventh.

"In TLL the highest number of targets I've managed to destroy is 40 with a score of 20732, although I have a higher score of 20928 for 38 targets. It can be a frustrating game as the targets become extremely difficult to destroy the further you get into the game. Does anyone know how many there are?"

Anthony Rowstron of Harpendon has a high score of 129,440 on Level 13 of *Zoom* which has been witnessed and verified by his mum which puts it beyond question. No decadent cheating in their household!

A Taylor of St Helens has stopped the express on Sinclair's game with a score of 5910, but has been pipped by either S Moran and N Dunbar of Newport, one of whom writes "I have completed Stage One of *Stop the Express* and finished

with a score of 6450. My highest score on *Sabre Wulf* is 222,878 and 83%. I suspect the latter score may have been achieved using their infinite lives poke but they don't say.

M Taylor of R.A.F. Kinloss asks for help getting through the flashing gate after completing the Processing Plant screen of *Manic Miner*. It is a long while since I have had time to play this game, but as I remember it you have to stand on the ledge on the left of the gate and edge your foot over as far as it will go before jumping.

Finally, this week comes a letter from some people trying to put me and Tony Bridge out of business. "We are creating a service that is directed to arcade (and adventure) fans everywhere. It will provide hints, tips, maps and infinite lives codes. Already we have got maps for *Sabre Wulf* and *Atic Atac*, as well as *Moon Alert*, *Tranz AM*, *JSW*, *Manic Miner*,

the *Horace* series, *Lunar Jetman* and many more. We will publish a newsletter every two months that will contain loads of information for the members. People will be able to have a say as well as publish their own tips and scores. We will have prizes for the best scores such as new games and pop videos, etc. Subscription is £3.50 (incl p&p) for the first year or 70p for the first newsletter and details of how to join."

If you are interested the address is I.A. Robinson, 33 Western Avenue, Prudhoe, Northumberland.

Tony Kendle

The Arcade Corner is a new section for anyone who enjoys playing arcade games. If you have any comments, from playing tips on difficult games or programs you'd particularly like to praise (or blame!) then write to: Tony Kendle, Arcade Avenue, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

Timer on Dragon

Your eyes flash repeatedly from keyboard to screen and back. Time flies by unnoticed as the data gradually fits into place. At last, there's the answer! Then the aftermath strikes. You have missed the train home, the shops are shut and your dinner is burnt to a crisp.

Don't despair, here is the answer to your

troubles. The routine below presents a clock display apparently running simultaneously with the main program.

For your own use, enter all units except the demonstration text, then liberally scatter *Gosub 350* throughout the main program. Precise spacing of the *Gosub* statements is not required since the clock is self-correcting. Machine code clear routines are provided, but remember to use *Print@* for the top line of your main display and to avoid scrolling.

The timer check in *Line 350* may require slight alteration depending on the exact pulse rate of your Dragon.

Program notes

- 130-140 Save space and read machine code
- 180-270 Input time from keyboard
- 310-330 Divide screen
- 340 Clear clock screen and zero timer
- 350 Check for a minute to pass
- 280-410 Format clock display
- 450 Clear main screen
- 460-570 Main demonstration program
- 610-670 Machine code screen clear

```

10 *****
20 * 24-HOUR CLOCK *
30 * TO INCLUDE *
40 * IN YOUR PROG *
50 * -- *
60 * WRITTEN BY *
70 * BRIAN HATTON *
80 * (C) 1987 *
90 *****
100 *****
110 * INITIALISE *
120 *****
130 CLEAR 200-32500
140 GO TO 460
150 *****
160 * SETTING *
170 *****
180 GOSUB 350
190 PRINT"SET 24-HOUR
200 * FROM KEYBOARD *
210 IF I=1 THEN GOTO 460
220 IF I=2 THEN GOTO 460
230 IF I=3 THEN GOTO 460
240 IF I=4 THEN GOTO 460
250 IF I=5 THEN GOTO 460
260 IF I=6 THEN GOTO 460
270 IF I=7 THEN GOTO 460
280 IF I=8 THEN GOTO 460
290 IF I=9 THEN GOTO 460
300 *****
310 FOR J=82 TO 68
320 PRINT"J,CHR$(131)
330 NEXT J
340 EXEC SHPEFS:TIMER=0
350 IF TIMER=30000-E THEN
360 E=TIMER-30000:R=VAL(CR)
370 IF LEN(R)<3 THEN M#
380 M#="0"+RIGHT$(M#,3)
390 IF LEN(M#)<3 THEN M#
400 M#="0"+RIGHT$(M#,3)
410 RETURN
420 *****
430 * DEMO *
440 *****
450 EXEC SHPEFS
460 PRINT"199,"demonstra
470 PRINT"170,"*****
480 PRINT"224,"THIS PROG
490 PRINT"224,"DEMONSTRATES THE
500 PRINT"224,"INCLUSION OF A CLOCK SUB
510 PRINT"224,"ROUTINE IN GAMES ETC. THE
520 PRINT"224,"RE IS NO LONGER ANY LIKELI
530 PRINT"224,"HOOD OF MISSING THOSE A
540 PRINT"224,"PPOINTMENTS."
550 PRINT"457,"press spa
560 PRINT"457,"ce bar"
570 IF INKEY# IF I#="" T
580 HEN GOSUB 350:GOTO 560
590 ELSE 560
600 *****
610 * CLEAR *
620 *****
630 FOR K=1 TO 26
640 READ A#
650 POKE 32500+K,VAL("MH
660 "+A#)
670 NEXT K
680 DATA 06,09,0E,04,00,
690 07,08,0C,04,20,26,F9,39
700 DATA 06,0A,0E,04,40,
710 07,08,0C,06,00,26,F9,39
720 RETURN

```

Timer
by B Hatton

Microradio

GW6JJN



Portable Stations

Some months ago, Microradio discussed the advantages of portable computers in amateur radio, particularly for competitive applications as well as the convenience of a small but efficient machine in the shack. At that time, I reviewed the Tandy Model 100. Following this, ma-

ny Tandy owners wrote to the column asking how best you might use your machines to communicate with other radio enthusiasts.

Down in the depths of Brighton is the office of John Noyce who runs the user group for portable computers; the "Kycocera User Group". Let me explain that the name Kycocera comes from the name of the factory in Japan where these machines are made.

The most recent copy of the newsletter, which John has sent me, includes an extensive article by P.J. Turner, a radio amateur from Suffolk, about the Trs80 Model 100 and its applications for Amateur Radio using AMTOR. The article is well

populated by photographs and diagrams and describes using the AMT-1 Amtor Terminal.

The AMT-1 unit takes in the RS232c output from the Model 100 and converts the signal to AMTOR, (Amateur Teleprinting Over Radio). AMTOR is so efficient a mode that even a low powered portable station can make extensive contacts.

The Kycocera User Group can be contacted by sending a stamped addressed envelop to: John Noyce, PO BOX 450, Brighton, East Sussex, BN1 8GR.

When the column recently described the making of a do-it-yourself interface for the Sinclair Spectrum, there were many readers who wrote in to say that they wanted to hear

more about actually getting down to printed circuit level and making something. I suppose the best thing would be a really powerful computer. Then you could install whatever interfacing for radio that you wanted. At the same time, why not go the whole hog and make the biggest selling, most versatile machine around — the IBM PC; well a compatible at least.

What I am leading up to is the fact that there is a company in the Midlands called Delvex who offer the boards for sale, along with components and all the help needed for the do-it-yourself hacker. Delvex can be reached on 0527 27816.

Ray Berry

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Speed up your 1541 disc drive with this **new** program. Loads most programs at **more than double** the normal speed. A flexible package that allows you to incorporate a **menu and fast loading on your own discs**. Also includes a file exchanger for programs put on disc with **"Disco"** (THE tape to disc utility), another way of making fast load disc programs. A **must** for all disc drive users. **ONLY £11.95**

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The **amazing** new cassette port adaptor for the '64, with **special software**. Requires access to two cassette units but is **100% successful, even with "fast" loaders**. They said it couldn't be done. **ONLY £12.95**

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BIGMOUTH

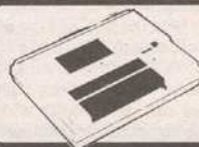
The **superb** new **speech synthesis** program for the '64. Uses "speak" as a basic command. **Very easy to use**. Can be incorporated into your basic programs. Words are entered in phonetic English, ie. spelt as they sound. Therefore vocabulary is **unlimited**. **Great fun** and good for educational purposes. **ONLY £7.95**

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Sound Editor

on QL

This is a program for the Commodore 1520 printer/plotter.

The program will generate a calendar for any year later than 1752 because on September 14 of that year the present calendar was adopted, which means that the calculi within the program would produce a Gregorian response to a Julian calculation.

The program only uses three character sizes: 20 cpl, 40 cpl and 80 cpl, which it uses for (in order of sequence): printing a heading - "Year calendar", printing the month and the day/date.

Program Notes

Variables

- M\$(12) = Month eg March.
- M(12) = Number of days in the month M\$ eg 31
- D\$(7) = Days of the week eg Mon, Tue etc.
- I = Counter
- L = Counter eg as above.
- V = Day counter - tells the computer what day the next date falls on eg mon 23
- Z = Print space counter.
- T = Counter for days in the month eg counts up to M(12).
- A\$ = String value of T
- Y = Year.
- A = Numerical variable used in calculating what day the first of January falls on

Lines

- 500-605 = Input the year and decides what day the year begins on.
- 3-5 = Open 4 of the printer channels: CHR size, colour, draw and print.

- 6-8 = Prints a calendar heading
- 9&31 = Draw a line from one side to the other
- 10 = Sets up dimensions of arrays.
- 20 = Inputs name of month (i) and the number of days.
- 30-110 = Prints the calendar.
- 50-95 = Decides which column the next date goes in (eg Mon)
- 200-210 = Data - month & number of days in it.
- 220 = Data - days of the week.
- 299 = Prints a line to divide the two columns.
- 300 = End of program.
- 310-400 = Adds an extra character to make two characters in the date
- 480-495 = Print an introductory page.
- 61 = Starts the program.

Poke 36879,8 colours the screen black - this is the only item in the program which needs to be altered to make it compatible with the Commodore 64 with a 1520.

```

4 GOTO400
3 OPEN1,0,1:OPEN2,0,2
5 OPEN3,0,3:PRINT#3,0:OPEN4,0,0
6 PRINT#2,0
7 PRINT#0,2:PRINT#4," " : " CALENDAR":
PRINT#3,1:PRINT#4:PRINT#2,1
8 PRINT#4," " MONTH
NOTES":PRINT#3,0:PRINT#4
9 PRINT#1,"D",429,0
10 DIMM$(12),M(12),D$(7)
20 FORI=1TO12:READM$(I),M(I):NEXTI
FORJ=0TOD:READD$(J):NEXTJ
30 FORI=1TO12:PRINT#4
31 PRINT#1,"D",429,0:PRINT#3,0
35 PRINT#2,2:PRINT#3,1
40 PRINT#4:PRINT#4
45 PRINT#2,3
50 FORL=0TOD:PRINT#4,0$CL,1:PRINT#4
51 PRINT#2,0
55 IF#30THEN#0=60T000
59 IF#30THEN#0=60T0400
60 FORI=1TOW(1)
70 IFV=7THEN#0=PRINT#4
80 GOTO310
90 PRINT#4,M$
95 U=U+1:NEXTT
110 NEXTI
200 DATAJANUARY,31,FEBRUARY,28,MARCH,31,APRIL,
30,MAY,31,JUNE,30,JULY,31,AUGUST,3
210 DATASEPTEMBER,30,OCTOBER,31,NOVEMBER
30,DECEMBER,31
220 DATASUN,MON,TUE,WED,THU,FRI,SAT
230 PRINT#1,"D",429,0:PRINT#1,"D",429,995:
PRINT#4:PRINT#1,"H",429,0:PRINT#1,"D",
429,250
300 END
310 IF(C10THEN#4=STR$(T)+ " GOTO90
320 #4=STR$(T):GOTO90
400 #5=" " :PRINT#4,#5:
405 IFZ=1THEN#6
410 Z=Z+1:GOTO400
480 POKE36879,0:PRINT
"*****"
CALENDAR CALCULATOR*****
"****"
481 PRINT"*****"
490 PRINT"***** THIS ONLY WORKS IN CONJUNCTION

```

```

WITH THE COMMODORE 1520 PRINTER"
491 PRINT" PLEASE NOTE THAT THE PROGRAM WILL
NOT WORK FOR ANY YEARS PRIOR TO 1752
493 PRINT" THE YEAR 1753, AS THEYUSED
ANOTHER CALENDAR THEN..."
495 PRINT"*****"
500 INPUT" WHICH YEAR?":Y:IFY<1753THENRUN
510 #5=INT(Y/100)
520 #6=#5-#Y-#A
530 #7=INT(Y/4)
540 #8=#7-INT(Y/4)+INT(Y/4)+1
550 #9=#INT(Y/4)
560 #9=#1
570 IFY=2000THEN#9=#-1
580 IFY=1900THEN#9=#+2
590 #9=#
600 IF#5THEN#0=0:GOTO600
601 IF#5THEN#6=0
602 IF#5THEN#6=0
605 #9=#
610 GOTO3

```

Sound Editor
by Andrew Fuller

The Music Box



Tone Control

First, a correction: the new MIDI-compatible Casio keyboard mentioned a couple of weeks ago is the CZ-101, not the CT-101 - and very impressive it looks, too. Casio is bringing out a whole new range of keyboards, all of which look inviting. The CZ-101 is the one that's most likely to interest computer users. It will retail at £395 and should be available from January.

Simple keyboard add-ons to computers are becoming increasingly available. There's Commodore's own clip-on device for the 64 (part of the £30

Music Maker package) at the cheap end of the scale. Further up the price range, you can buy Autographic's *Microsound* keyboard or Siel's CMK 49 for the Commodore (both with software and priced between £125 and £150) and LVL's *Echo I* for the BBC Model B or the 64 at around £100.

As far as the BBC is concerned, its biggest failing is sound quality. This is partly due to the use of 76489 sound generator - a situation which can't be improved - and partly due to the woefully inadequate on-board audio output circuitry. LVL has had the canny idea of marketing an external amplifier for both the BBC and the 64 (the *Echosound*). Those of you who don't want to fork out £50 for one of these purpose-built devices can quite easily wire up their computers to their own hi-fi sets. PL16 and any of the 0 volts pins on the BBC's 1 MHz bus will give you an audio output signal, which can be fed into the tape input on your

amplifier. On the 64, audio output is provided on pins 2 and 3 of the 5-pin audio/video DIN socket on the back of the computer. Both these outputs are useful for recording your music but, in the BBC's case, you can also improve the sound no end by a little judicious use of tone controls or filters.

This point about the BBC has been made - to me anyway - most forcefully by Doug Tate who runs the one-man Music-software show at 12 Fallowfield, Ampthill, Beds (0525 402701). Doug has produced a suite of music programs for the Beeb which is designed for everything from amusement, through teaching, up to high quality synthesis. The most sophisticated program (The Synth - for OS 1.0 up) retails at £8.75, while the others, offering a range of facilities and amusements, sell for £5.75 each. I can heartily recommend them all. Please send Doug an SAE for further details.

Ranged against him - al-

though not entirely in competition - is the rather larger concern of Island Records, whose software division (Island Logic) have just released their first product (for the BBC), ambitiously titled *The Music System*. TMS is really designed for professional composition (including, as it does, a music print-out facility). It retails at £24.95 on disc or at a total of £25.90 on two cassettes. I can say right now that the packaging, the features on offer and - most of all - the graphics are superb.

Gary Herman.

The Music Box is a new weekly column with news, reviews and readers comments on all aspects of micros and music.

Any readers with experience of computer music making or companies with new product news are invited to write to: drop a line explaining what they're doing to: Gary Herman, The Music Box, 12-13 Little Newport Street, London WC2R 3LD.

No man's land

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Calendar

on Vic-20

This is a program for the Sinclair QL computer. It allows the user to experiment with the *BEEP* command which is not very well documented in the user guide. To use

the program the user must press one of the number keys which matches the selected option. Once this is done they must enter the new value, followed by enter.

```

100 MODE 4 : k=0
110 CLS 0
120 PAPER 3
130 :
140 time=10000
150 pitch1=0
160 pitch2=0
170 xgrad =0
180 ygrad =0
190 wrap =0
200 fuzzy =0
210 rand =0
220 CLS
230 INK 7: AT 2,0:PRINT "Sound Editor"
240 PRINT "-----"
250 PRINT
260 AT 5,0:ffill:AT 5,0
270 INK 7
280 PRINT "BEEP ";time;","pitch1;","pitch2;","
";xgrad;","ygrad;","wrap;",";
fuzzy;",";rand
290 PRINT:PRINT
300 PRINT "1-Time      :";time
310 PRINT "2-Pitch1     :";pitch1
320 PRINT "3-Pitch2     :";pitch2
330 PRINT "4-Xgrad      :";xgrad
340 PRINT "5-Ygrad      :";ygrad
350 PRINT "6-Wrap       :";wrap
360 PRINT "7-Fuzzy      :";fuzzy

370 PRINT "8-Random  :";rand
380 PRINT "9-Play"
390 a$=INKEYS(-1)
400 IF a$="1" THEN AT 8,0:ffill:AT 8,0:INPUT"
Time      :";time:k=1
410 IF a$="2" THEN AT 9,0:ffill:AT 9,0:INPUT"
Pitch1    :";pitch1:k=1
420 IF a$="3" THEN AT 10,0:ffill:AT 10,0:INPUT"
Pitch2    :";pitch2:k=1
430 IF a$="4" THEN AT 11,0:ffill:AT 11,0:INPUT"
Xgrad     :";xgrad:k=1
440 IF a$="5" THEN AT 12,0:ffill:AT 12,0:INPUT"
Ygrad     :";ygrad:k=1
450 IF a$="6" THEN AT 13,0:ffill:AT 13,0
:INPUT" Wrap      :";wrap:k=1
460 IF a$="7" THEN AT 14,0:ffill:AT 14,0
:INPUT" Fuzzy     :";fuzzy:k=1
470 IF a$="8" THEN AT 15,0:ffill:AT 15,0
:INPUT" Random   :";rand:k=1
480 IF a$="9" THEN k=1
490 IF k=1 THEN k=0:BEEP time,pitch1,pitch2
,xgrad,ygrad,wrap,fuzzy,rand
500 GO TO 230
510 DEFine PROCEDURE ifill
520 INK 0
530 PRINT FILL(" ",39);
540 END DEFine

```

Calendar
by R Sage

Book Ends

SPECTRUM SUPERGAMES



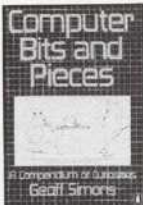
Books Spectrum Supergames: The Atmos Book of Games: The QL Book of Games
Prices £5.95; £3.95; £6.95 (QL)
Micros Spectrum, Oric Atmos, Sinclair QL Supplier Micro Press, Castle House, 27 London Road, Tunbridge Wells, Kent

Despite their attractive glossy covers, we have here three books of Basic listings for the Spectrum, QL and Oric Atmos, each costing approximately the price of a good machine-code game.

The types of game offered are fairly standard — a card game, an educational game, an adventure, etc. However, all three publications bow to the idea that typing in listings teaches programming by including notes on technique. This at least could raise them above some of their opposition.

There may be some argument for games listings for the QL, which lacks software and has a fast Basic, but the Spectrum is so well supplied that books like this enter a market which is already glutted.

John Minson



Book Computer Bits and Pieces
Price £3.95
Micro Any Supplier Penguin Books, Harmondsworth, Middlesex.

In the period before Christmas many 'nothing' books get published such as 'How to be a Wally' or '1001 Computer Facts'. This book belongs to the latter category, though commit them all to memory and you could well belong to the former!

The problem with it is that it contains nothing but 'data' with

no indication of how to use it. The result is an information overload as indigestible as too much Christmas pudding.

Many of the facts are superficially fascinating, in particular those on microchips and warfare, however the lack of supporting context devalues them. There is no indication of the controversy surrounding certain facts, such as the discovery of the 'ultimate' prime number, either.

A trivial exercise, though parts could still set you thinking.

John Minson



Book Writing Software for Profit
Price £4.95
Micro Any Supplier Virgin Books, 61-63 Portobello Road, London W11 3DD.

It's probably the dream of every programmer to sell his or her work and retire to a tropical tax-haven.

AJ Harding's book won't help you develop your computing skills, but it does indicate some of the pitfalls along the road to fame and fortune.

It takes the potential millionaire from choice of computer, through types of software, business, utility or games, to copyright, contracts and tax.

Mr Harding runs the Molmerx publishing company and knows the industry well, but his book suffers from being too much of an informal chat with too few specifics; an index would have been valuable as well.

But if you can provide the talent, this book could help to point you in the right direction.

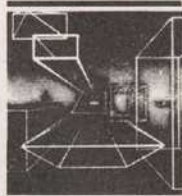
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Tony Bridge's Adventure Corner



Sweet dreaming

While *The Quill* prompted a huge number of adventures to be written for the Spectrum, its release for the Commodore has not, as yet, elicited such a response. This may change now that Codewriter Ltd have taken the package under licence. This company is an American outfit, originally called Dynatech and renamed in honour of its main product, a database called *Codewriter*. Having signed a license agreement with Gilsoft, they are now marketing *The Quill* under the name of *Adventure Writer*. It is available now on disc for the Atari, Apple II and Commodore 64 for £24.95. The program, apparently, is exactly the same as the original *Quill*, but the manual has been made much more friendly. This is obviously great news for Apple and Atari owners — now they can add their adventures to the flood of Spectrum (and some Commodore) programs. If you fancy yourself as an adventure writer, don't hesitate — you'll find this one of the most useful utilities you own.

It's not, maybe, such good news for Commodore owners, who can obtain the same program (though an outdated manual) from Gilsoft at a mere £15 (cassette) or £20 (disc). It's a pity that Codewriter's advert doesn't mention *The Quill* anywhere, but I'm sure they do in the documentation.

Meanwhile, Gilsoft themselves have just released *The Illustrator*, the follow-up to *The Quill*. Although they have secured an honoured niche for themselves in the Adventure Hall of Fame with the earlier program, Gilsoft have now gone, I'm told, one better in this new utility. Using it in conjunction with *The Quill*, the intrepid adventure writer can now add graphics to his Quilled adventure. Again, more news as soon as possible.

As far as Quilled adventures on the Commodore go, I have only been sent one! This is from Keith Wadhams, who has written *Problems of Dreaming*. He says that, although he hopes to be able to interest someone in marketing this program for him, he is prepared to supply a copy for £3, including postage and packing, to anyone who cares to write him at 122, Melrose Avenue, Wimbledon Park, London SW19.

I passed the tape along to my good friend and fellow adventurer, The Great Wizard, aka Ken Matthews, who had this to say:

"As you can tell from the title, this is about a dream world — the dream world of a young boy (played by you) who, bored with a rainy day and fed up with watching TV and reading papers, finally falls asleep. In his dreams, characters and situations from the newspaper and TV come to life. Eventually he finds himself in a nightmare.

"Keith has obviously taken a great deal of time to develop his ideas and put a lot of thought in to the program. I thought that it might be easy when I found the Bent Pin, needed to pick the shed lock, in the very next location. This is far from the case! Location descriptions are detailed and contain clues to portable items, so close attention is needed at all times. To date, all of the problems have a logical solution and the command analyser has understood a variety of synonyms.

"Overall, then, I'd say that the game is better than many I've seen, and certainly deserves better than being sold for £3"

Level 9 has been busy over the past few months. The new programs are not only up to the usual standard as far as the text is concerned, but now, as I'm sure you'll be aware, also include graphics for the first time. These are executed with Level 9's usual eye for detail, and are small, but, like

the Grand Elf, perfectly formed. *Return to Eden* is the sequel to *Snowball* and takes place on the planet Eden, while *Eric the Viking* is based on the book by Terry Jones of *Monty Python*. The substantial package includes several extracts from the book to give a flavour of the original. On-screen, both programs look very similar, with a new character set which I found quite difficult to read — but the problems to be found in the adventures are in the best Level 9 tradition, and I'm sure that the Corner will have many letters about these adventures. I'm looking forward to delving further into these games.

Talking of letters, here's one from a miffed Hareraiser fan: "Dear Tony, After reading about Hareraiser in PCW, I wonder who these nerds are who think this isn't any good. I am one of a group of six who have had immense fun from seeking clues on this treasure hunt, and furthermore, it's not meant to be like the book *Masquerade*. If one seeks to win the *Golden Hare*, the computer gives the clues, the rest is down to you — that is, if you're intelligent enough. Yours, Mrs J Y Widdowson."

These 'nerds', Mrs Widdowson, are those people who have been persuaded that this program is actually an "adventure puzzle". At the top of the ad for the game, in great big letters it says "Win! the famous jewelled Hare of *Masquerade*" and, though, I'm sure that you've had a lot of fun, Mrs Widdowson, I don't blame anybody else for being disappointed after thinking that this 'puzzle' might be at least a little closer than a million miles to *Masquerade*. But this is the final correspondence on the subject — I've had enough already!

And now a final letter, from Scott Kelly of Glasgow. He is stuck in *Old Father Time*, for the BBC. This is from Bug-Byte, and I haven't seen, nor know anything about it. Scott is having trouble right at the start and is a bit embarrassed at the whole thing, having had success with other adventures. Confronted with a forest floor covered with leaves, I admit that my first reaction, too would be to move the leaves — how about search or examine the leaves? But I'm sure you've tried this one, contact Scott at 12 Pollock Rd, Bearsden, Glasgow G61 2NJ.

Scott offers reciprocal help with *The Hobbit*, *Adventureland*, *Sphinx Adventure*, *Philosopher's Quest*, *The Count*, *Castle of Riddles* and *Colossal Adventure*. As usual, don't forget to enclose a SAE if you want a reply from him.

This series of articles is designed for novice and experienced Adventurers alike. Each week Tony Bridge will be looking at different Adventures and advising you on some of the problems and pitfalls you can expect to encounter. So, if you have an Adventure you want reviewed, or if you are stuck in an Adventure and cannot progress any further write to: Tony Bridge, Adventure Corner, Popular Computing Weekly, 12-13 Little Newport Street, London WC2R 3LD.

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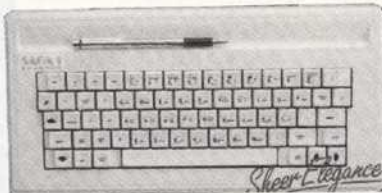
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Quick and reliable

Alexander Lepre of Marsa, Malta, writes:

QI am considering the purchase of Digital Research's *Sprint* for the Spectrum, and so I would like to know whether it is really all that it states in the advert.

AI don't know what adverts you have seen, but if they have appeared in British computer magazines, then you can be assured that the machine will do what is claimed. The British Advertising Standards Authority are quick to act against misleading or incorrect adverts.

Also, my experience is that the *Sprint* (which is made by Challenge Research by the way), is very quick, and very reliable.

Thesaurus index

C S Ryan of London, writes:

QBeing an avid crossword fan, I would like to know whether there is a program that I could use to form something like a thesaurus? For example if I type in *Blot*, I would get a list of words such as *Blemish, Soil, Obliterate, Stigma*.

My computer is a 48K Spectrum with a cassette recorder only, my knowledge of machine code is nil, and my Basic very limited. I am thinking of a dictionary in excess of 5,000 words. Is this type of program impossible on a Spectrum?

AWell let's take a look at the facts. Assuming an average word length of 7 characters, gives us 35,000 characters

of Ram needed to store our dictionary. Obviously this is far too much, so you would have to use some form of character compression techniques.

Assuming that on average each word would have 5 alternative words, gives us 25,000 numbers that have to be stored. Again, this is too high a figure.

We are only able to use cassette tape for storage. This means that we cannot realistically manipulate the thesaurus via the cassette. There are no software packages suitable for such a purpose which work with cassette tape (or indeed as far as I know with disc).

I think that the conclusion I reach is that with your self confessed limitations in programming know-how that this project is a non-starter. However, if you were able to find a machine code programmer to collaborate with, you might have some chance of success.

Pascal compiler

John Alexander of Bognor Regis, writes:

QI have two queries regarding the Vic 20 computer. Do you know of any Pascal Compiler, or interpreter for this machine? A cartridge would of course be preferable. Also, can you suggest a supplier of suitable plugs to connect to the User and Games Ports to allow the connection of special peripheral units?

AIf only you had a Commodore 64, John. Since the launch of the 64, the poor Vic has been almost completely neglected as far as software is concerned. It seems to me that with the number of Vic 20's that are still in use that there is a large market that is simply being neglected by the software companies. You may have gathered from this that the answer to your first question is NO. More luck, however, with your second question.

Kentech are suppliers of a large number of interfaces, etc, for the Vic (and other machines). They may be able to satisfy your requirements. Their address is: Kentech, St. Oswalds Trading Estate, Gloucester GL1 2SU.

A lost voice

Kevin Edwards of Stoke-on-Trent, writes:

QI own a Commodore 64 with Simons Basic. As many readers may agree, the Simons Basic manual is far from being sophisticated, and only outlines the simple commands and uses.

Recently I have been trying to compose a tune. However, I could not seem to get any voice bar voice one from working, however carefully I followed the instructions.

Could you possibly advise me where I might be going wrong?

AWell, no actually. As you haven't told me what you have done, I cannot tell what, if anything, you've done wrong. I agree, however, with your point about the manual, though.

The Commodore Programmers Reference Guide on the other hand, has an excellent section concerning the SID sound chip, and the way to get the most from it.

This book is available from most good bookshops, and is definitely worth a look.

Two gold stars

D C A Turkhud of Hornsea, North Humberston, writes:

QIn answer to a query in PCW in September you stated a number of difficulties in loading *Vu-File* on to microdrive.

Using the software *Trans-Express* published by Romantic Robot of 113 Melrose Avenue, London NW2 4LX, I have successfully transferred both *Vu-Calc* and *Vu-File*.

AI have had a number of letters on this subject, mostly pointing out that the method of transferring software to microdrive depends on the program.

One software company

wrote to me and explained that they had introduced a scheme whereby owners of cassette versions of some of their products could obtain microdrive versions on an exchange (plus £1.50) basis. This company (Picturesque), also pointed out that their attitude had been motivated more by a desire to obtain 'customer good will', than by a desire to generate revenue.

This kind of behaviour in a software company is to be applauded, and I therefore award Picturesque Software two gold stars, and top place in the 'Peek and Poke Hall of Fame'. Not an award that is given lightly.

Picturesque can be contacted at 6 Corkscrew Hill, West Wickham, Kent BR4 9BB.

Statement output

Bryan Scott of Hayes, Middlesex, writes:

QAs I have had some trouble recently with Spectrum programs (*Zeus Assembler, Vu-Calc*). I tried the *Print In 16602* statement shown in PCW, Vol 3 No 38 and got the answer 63. As I have an issue 3 computer what does this mean please?

ASince the appearance of this now legendary method of identifying a Spectrum, I have received numerous letters quoting various numbers that were produced in response to it. 63 is in fact the leader, with 126 and 199 close behind. I am at somewhat of a loss to explain this, as my machine continues to output the depressingly consistent value of 191.

As a check, I used my backup method of determining the issue number, which is *Print In 57342*. This produces 191 on an issue 3, and 255 on issues 1 and 2 (normally).

I would be interested in hearing from readers who experience any differences with this statement's output as well.

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem **Peek** it to Phil Rogers and every week he will **Poke** back as many answers as he can. The address is **Peek & Poke, PCW, 12-13 Little Newport Street, London WC2R 3LD**

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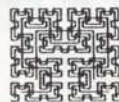
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SPECTRUM SOFTWARE over 30 originals including Sabre Wulf, J.S.W., Manic Miner, Spat Scope and Chuckie Egg. All well known titles worth over £220. Sell for £60 or will split ono. Chelmsford 421265.

SPECTRUM VTX 5000 modem, mint boxed, £60, Vaihalla, Hobbit, Fithe, Hurg, Artch Forth, Scope 2 £6. Wheelie, Fighter Pilot, JSW, Lunar Jetman, Jumbly, Code Name Mat, Bridge £3 Tel: Sheffield 460004.

48K SPECTRUM boxed with manuals, leads + compatible cassette recorder. Over £90 or software + lots of mags — £95 Tel: 051-430 6504.

NEW 48K Spectrum + leads + DK Tronics keyboard, joystick + interface. Tape Recorder, s/w inc: Beach Head, Decathlon etc: £150. Tel: Redhill 67335 (Kevin) work no.

SPECTRUM 48K interface 1 + 2 microdrive + 6 cartridges, joystick + interface, cassette recorder, s/w and books. £280. Tel: Bournemouth 526 424.

SPECTRUM 48K + Microdrive + interface 1 + Protech switchable joystick interface + s/w inc: White Lightning, Sabre Wulf, Eureka, Sherlock, £380+. Sell for £250. Tel: Jerry, 01-738 0491 W/days after 4pm.

48 SPECTRUM Interface I, Microdrive, Kempston joystick, Cheatsah microspeech, magazines + games. Sell £275 or swap for BBC B 1-2. Tel: 041-638 5425 after 6pm.

BUG-BYTES Cookbook, two cassettes, new unused, boxed, unwanted gift. £5.50 Tel. 0428-713019.

SPECTRUM 48K complete machine code tutor m/c. For absolute beginner. Abersol, Forth, Grand Prix Manager, Football Manager. Worth £49.75. Will swap for Sharp PC1500 or Interface or sell £25. Tel: 01-859 2798.

SPECTRUM S/W eg. Beach Head, Travel with Trashman £3.00. Oneiron, Thrusta, Push Off £1.50. Painter £2.00 each. Tel: 01-573 4044 (eves Bob).

ZX SPECTRUM 48K, boxed, Kempston joystick, cassette recorder. £280 of original mags. £240 ono. Tel: Loughborough 231393.

48K SPECTRUM, Kempston joystick interface, Quicksilver I joystick, tape recorder + much s/w and mags. Total value £400. At £225. Tel: Milford Haven (Dyfed) (08462) 3182

SPECTRUM S/W for sale, loads of titles, 1/2 price or less (all original) also various magazines for sale. Tel: 01-949 0225. Ask for Mr Kakan.

FOR SALE Spectrum educational originals. Ppl free. £3.50 each. Geography, Paddington shopping, Griffin Numberfun, Look Sharp, Count with Oliver, Castle of Dreams, Sam Safety. Phone 01-800 6767 after 7pm.

ORIGINAL Spectrum software: Ad Astra, Boogaboo, Tranz Am, Puncty, Escape from Arkaron, Into the Empire, 16148, No.6, No.7, only £3.50 each! A. Ashton, 93 Allcroft Road, Birmingham B4 3EF.

STACK Light ritle with software + joystick + sound amp + £80 software etc... Cost £150. Swap for interface 1 + microdrive or Spectrum Modem or sell £75. Printer wanted. Tel: 0342 713422 Sussex area.

SPECTRUM software: River Raid, An-

droids, Mad Martha, Knights Quest, Zoom, Raider of the Cursed Mine. £2 each or £10 the lot. Tel: AbSon 2477. Will send!

48K Spectrum plus, Kempston joystick, plus games, plus books, plus magazines. All good condition and boxed. Price £150. Tel: Harpenden 64080. After 6 o'clock.

SPECTRUM GAMES for sale - original Hulk, Danger Mouse, Arcadia, Lunar Jetman, Buggabo, Manic Miner, Tony Dactyl, Jet Set Willy, Beach head, Ant Attack. £3.4 each Tel: 01-505 3245.

48K Spectrum + games, books, mags. £80 for quick sale. Tel: 0865 242701.

SPECTRUM 48K. Over £500 software, Kempston interface and Quickshot joystick still under guarantee. Excellent condition. Bargain £150. Tel: 4551043 after 3.30 pm.

ORIGINAL Spectrum software: Reverst, Blue Thunder, Androids, Galaxy Attack. £3 each. Hobbit only £8! Callatilla, Gobble a Ghost, Schizoids, Planet of Death, Aic Atac. £2.50 each. Rifle Range £1. Bristol 777593.

RANGE spectrum software for sale. 20 original tapes also 5 books plus VT55000 modem. Will sell the lot for £85.00. Phone: 0493 853920.

SOME Spectrum s/w eg. Danger Mouse, Daley Thompson, £3 all original. Tel: 061 450 6689.

SPECTRUM Software: Alchemist, Scuba Dive, Lunar Jetman, Fred, Chuckie Egg, M Coder II, The Pyramid, plus many more. All originals. Only £3 each. Phone (0455) 611777.

SPECTRUM 48K + software + tape deck + mags - whole system over £600 + Offers to Andy 0514 307608 or will consider swap for Atari 800XL plus drives (software also appreciated) Ugh!

48K Spectrum, £190 s/w, Tape recorder, Int 2, dust cover + Sprint 4times faster tape loading. All for £260. Worth £450. Must go. Phone Andy (0933) 317858.

48K Spectrum, original software: Kaleidoscope, Death Alley, Meany Monster, Alien Armada, Night Raider. £3.50 each. £15 the set. 4 St. James Court, Wicklemarsh Road, Blackheath, London SE3 0NE. Phone 01-856 8773.

SPECTRUM 48K brand new unwanted present with some software, bargain for Christmas £100. Tel: 01-636 9636 day-time.

48K Spectrum with new dktronics pro key board, printer + interface. Quickshot II joystick and 23 original s/w games tape cost £405. Will accept £195 one. Tel: 0924 258430 (Wakelife) Yorks.

SPECTRUM 48K as new 30 keel, manual etc, offers Sinclair ZX Interface 1 + Microdrive + cartridge, offers Casio TV 100 pocket computer, offers: Tel: Hornchurch 42642 after 4pm.

SPECTRUM s/w for sale incl. Jasper, Turmoil + Zombie. Tel: Sam 01-368 3784 after 4.30 pm.

48K Spectrum Fuller FDS keyboard, sound amplifier 3 joystick interfaces, Currah Speech Plus 182 games simulation etc, Decathlon Combat Lynx all originals, £350 one. Room 7, 18 Victoria Park, Dover, Kent.

Ataris for sale

ATARI VCS with 35 cartridges, 3 joysticks, paddles, video, touch pad and cartridge box. Worth over £550, ideal xmas present at £200 one. (includes Phoenix, Enduro, Smurf, Defender) Tel: 091-2852003 (Tysside).

ATARI 800 + Cass. + s/w + books + mags + basic + manual. excellent cond. £180 or swap for CBM64 + C2N. Buyer must collect write with phone number. S.Sanger, 30 Station Ave, Wickford, Essex SS11 7JS.

ATARI 800 48K, unwanted prize, very good condition. £100 one. Tel: Threadwood 354 after 6pm.

ATARI 800 48K with 410 cassette, many top selling games including Astro chase & Pinball, Basic, Manuals, Joysticks boxed as new. £175 one. Tel: 0225 810132 or 0249 655854 after 6pm.

ATARI 800XL cassette unit, joystick, tape, s/w original, 7 cartridges, books and magazines. Sell for £210 one. Swap for CBM64 + tape unit. Tel: J. Gablehouse. 0622-4745.

ATARI 800XL 16K tape recorder 4 original cassettes 3 cartridges, excel. graphics, boxed, vvcg., £85 one. Tel: West Malling 848499 ask for John 5pm onwards.

ATARI 400/800 software all original and brand new, mostly cartridges £5 each or 10 for £45 or 20 for £80 one. Tel: (021) 749 4603 ask for Pete.

ATARI 800, 48K joysticks basic cassette program basic cartridge Pacman Asteroids and Star Raiders cartridges, all good condition only £80, 3 Lord St, Great Harwood, BB6 7DX, tel. 0254 885113.

ATARI VCS with joysticks, paddles leads, etc, 7 games including defender and pack-man, good cond., £70 Tel: Guseley (0943) 77001 eves.

CBM64 s/w to sell, many new titles, original for sale only. Tel: 0705 37379.

CBM64, C2N, manual, over £60, of software all original £80, worth of new books, cost £420, sell for £320, only reply to every letter, 57 Sycamore Avenue, Milnsbridge, Huddersfield HD3 4SG.

EDUCATIONAL game for CBM64 Choochoo for ages 5-11 can be made to your own special requirements, superb graphics, a bargain at only £4. Tel: 021 742 6334.

Acorns for sale

BBC B Computer with Ferguson TX 14" television, Tandy DGP-115 printer and interface, games, books, and leads. Approximately £770 ovno. Tel: Coventry (0203) 614924 evenings.

BBC Computer software for sale, including Elite, Dune rider and Gateway to Karos. Together with 30 quality games. £165 including delivery. All originals. Phone Sevenoaks 454717. Cost new £300.

FOR SALE BBC B, DFS, disk drive, 100K, View 2.1, ideal for wordprocessing £500. Tel: Cardiff (0222) 485684.

ACORN Electron with all inc: leads, manuals £35. Computer tape recorder + £50 of s/w. 8 months old, under guarantee. £150. Tel: Sheffield (0742) 551235.

BBC B, Cumana double disk drive and lots of cassette software. Brand new unwanted presents. £600 the lot. Call Wendie Pearson, 01-251 6222 (day) or 385 5817 (eves).

ELECTRON for sale. £165, immaculate, hardly used + software, magazines, books and leads. Worth over £250. Tel: 01-959 5767.

BBC Software for sale. All originals. Hobbit £7, Vision's Snooker, Blagger, Killer Gorilla, 3D Bomb Alley, Program Power Chess £4 each. Tel: Darlington (0325) 55410 after 4pm.

ELECTRON s/w for sale. Twin Kingdom Valley £4.50. Cylon Attack £4.00. Elite. Unwanted gift. £10 Tel: 061-368 6935.

COLOUR monitor for sale £115 + leads for BBC. Leeds 560102 after 4pm.

£200 of BBC s/w, all original, excellent condition. From £3.00 each. Tel: 0222 867086.

BBC 32K software: Galactic Commander £3.00, 737 Flight Simulation (Salamanca) £5.00, Twin Kingdom Valley £5.00, Blagger £5.00, Adventure Quest (L9) £5.00, Eldorado Gold £1.00. Originals only. Tel: 0258 840357 w/e.

BBC SOFTWARE half price, Starship Command £4.95, Overdrive £3.95, Pole Position £6.45, 3D Grand Prix £4.00, Gorph £3.00, Monsters £4.55, Killer Gorilla £4.00, Vortex £3.90. Tel: Chelmsford 0245 50432.

BBC B double-sided disk drive + double density interface + cleaning kit. Box of 8 disks + £100 of s/w inc: TaPe + disks. All original! under guarantee. Worth £770. Sell £570 one. Tel: John w/d after 4pm (061) 8814496.

AQUARIUS Computer + expansion unit + joystick + 16K + printer + games + manuals. All boxed with leads £110. 0935 813829 after 5pm.

BBC SYSTEM, Hobbit microdrive, printer, Acorn speech, Wordwise, Aid, Toolkit, Graphics, Graphic dmp, Delta

handset, sidewise ROM board + more. Offers around £800. Write Moe, 19 Wainfleet Road, Skegness, Lincs.

Tandys for Sale

VIDEO GENIE System EG300E. Built in cassette unit £100 of s/w + books, manuals. All perfect condition £150. Tel: 01-674 2091. Tony Anderson.

TANDY CGP 115, 4 colour printer plotter, with spare pens, dust cover, manual, and leads to connect to Dragon. £125 vgc. inc postage. Tel: Whiteabbey 63388. lan.

TANDY TRS 80 16K L.2, tape recorder, software, games, programs, manuals, books. As new £150 one. Holmes Chapel (0477) 32376.

TANDY TRS80 Mod I level2 + expansion interface + monitor + cassette recorder, 48K memory, upper & lower case, numeric key pad, manuals, programs £150. 0935 813829 after 5pm. or swap for Acorn Electron.

Dragons for sale

DRAGON 32 with MCP-04 colour plotter, cassette player, joystick, light pen, 19 original titles including: All Dream Assembler, 3 books + all Dragon users. Sell £175. Tel: (061) 796 8341.

DRAGON 32, disk drive, Dragon DOS, disks, yosticks, cover, £400 + of original software, leads, magazines, books listings all boxed in vgc. Worth £900 +. Sell £400 one. Ring lan evenings, southampton 695236.

DRAGON 32 + Cassette recorder, leads, 3 joysticks + lightpen, 1 cartridge, books, mags, loads of software eg. Donkey Kong, Frogger, Golf etc. vgc. £170 inc. Postage. Tel: White Abbey 63388.

DRAGON 32K Computer plus PSV leads + manual + 2 joysticks and s/ware. £80 one. Tel: Harlow 32192.

DRAGON Software - top titles from Microdeal, Dragon Data, A & F, Salamander. Also Gemini Spreadsheet and Textstar wordprocessor. All titles original and half price. Tel: Ian on Bradford (0274) 583734

DRAGON 322 joysticks 20 games, utilities, 1 cartridge 4 books, DU and Rainbow mags. £140 one. Write to A.J. Pimperton 122 Elmsdale Ave, Little Heath, Coventry.

DRAGON 32 plus £100+ software (includes Telewriter and Database) for sale. Owner upgraded to Dragon 64, and disc systems. Price £100 one. (Could include books if required). Tel: 01-960 0684.

DRAGON printer 80 col. thermal with cable, etc: ready to use. Only £40. Tel: Wane 68264 (Too heavy to post) 15 DRAGON games for sale, titles

COMPUTER SWAP

Computer Swap entries are limited to 30 words. Either fill in the accompanying form and send to Computer Swap, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD or telephone 01-437 4343.

All software offered through computer swap must be in original condition and for private sale only.

It cannot be swapped. **Warning:** It is illegal to advertise pirated software.

COMPUTER SWAP

Please write your copy in capital letters on the lines below.

Name.....

Address.....

Telephone.....

include Buzzard Bait, Ugh! and Hunchback. Was once £100. Sell £50. Tel: 01-730 1688.

Commodores for Sale

CBM 64 s/w for sale, Summer Games, Raid over Moscow, High Noon, Havoc, Axtex Challenge, and many more new releases. Tel: (0902) 734050 ask for Gaz after 4pm.

CBM 64 1541 disk drive, disk joystick, Cassette interface. £300 or will swap for Amstrad, CPC 464. Tel: 0342 833574.

SIMONS BASIC CBM64 130 one. Tel: 0438 316780 (Stevenage).

NEARLY £100 for Vic-20. Plus 1.6K switchable memory. Originals only. Sell at £300 ono. Tel: Chris 0472 53619

VIC-20 16K Ram Pack £20. Tel: 01-701 9485.

FOR SALE Vic-20 + Cassette unit + 8K RAM + Introduction Basic 1 + Books + £50 of software, worth £230. Will sell for £150. Tel: 0475 686587. Phone anytime.

VIC-20 Cassettes for sale. All originals. Very cheap and in excellent condition. Rabbit, Anirog, Interceptor, Imagine and many other software houses. Tel: 0689 54609 after 4pm. Ask for Martin.

VIC-20 Starter Pack plus switchable RamPac plus Super Expander 9 game cartridges 15 game cassettes, assembly course, other oddsments. Worth £400. Sell for £240 one. Swindon 642533 after 5pm

VIC-20 plus C2N cassette player, 8K RAM Pack, books, s/w, joystick and chopfilter cartridge. £95. Tel: 01-954 6895.

VIC-20 + C2N cassette + 1 game (Meteor Blaster). Very good condition. Sell for £70. Tel: 241 0370. Ask for Ali.

EXCELLENT Condition Commodore 64 + Cassette with over 60 games inc. Beachhead, International Soccer, etc. Joysticks + Speech + books worth over £900. Offers £350 ono. Tel: Andrew 614157.

VIC-20 Complete Starter Pack + free s/w (originals only), books. £80. Tel: (6-9pm) 01-949 1334.

VIC-20 16K switchable Ram Pack, joystick, cassette recorder, 4 cartridges, £100 of original s/w. £110. Tel: Nazeing 3207.

16K SWITCHABLE Ram Pack for Vic-20 vgc. Only £15. Tel: 061-480 2445 after 5pm. (Ask for Petr).

GOODIES, rarties for Vic-20 and CBM 64. Great software from UK and USA. For large graded lists please send see to John Keogh, 30 Highwood Avenue, North Finchley, London N12 8QP.

CBM 64 with cassette unit, joystick + 1 game £180. Tel: Kiddeminster 0562 744690.

VIC 20 + cassette unit (boxed), 3K Super Expander, joystick, £100 of original s/w. Ideal xmas present £130. Tel: Thorn (0405) 813772.

CBM Printer as new, boxed. £170. Thorn (0405) 813772.

VIC 20 16 Expansion, 3K Super Expander, C2N recorder, Stack Light rifle, 7 Cartridges, games, 64 original cassette games. Introduction of Basic I & II, 12 programmable books £225 ono. Tel: Orpington (Kent) 29067.

VIC 20 s/w for sale, Panic, Arcadia, Tornado, Gridrunner, Crazy Kong, Metagalactic Llamas battle. All original and in excellent cond. £20 the lot. Clarkson 42, Morecambe Street Liverpool L6 4AX.

CBM 64 software for sale. Genuine. All Level 9, Twin Kingdom, Hover Bover, Heroes of Karn, Classic Adventure, The Boss, etc., Valhalla, Beachhead, Pettigrew Chronicles. All games Half price. Phone: Worcester 352869.

COMMODORE 64 for sale with peripherals (disk drive and MPS 801 printer 50cps) and software (word processing, accounts, games) and very useful documentation. Will sell the lot or part. Phone 01-654 0808.

VIC 20 Starter Pack + into Part 2 + 16K switchable RAM pack + 20 games, worth £335 Sell for £150 Tel: 01-597 7106.

VIC 20 + cassette deck + 16K + Super Expander + joystick + 19 inch b/w TV + programmers reference guide + manuals + magazines, fully boxed. Worth £350 + £160 of software. Accept £170 one. May split. Tel: Mansfield 792911.

VIC 20 Starter Pack, over £160 worth of original software, Quickshot joystick Mark two, Introduction to Basic programming I & 2, manuals, books, worth over £300. Sell £120 Tel: Coventry (0203) 360 950.

VIC 20 C2N, 16K switchable RAM pack. Intro to Basic I, Quickshot 2, lots games and mags. £130. Ask for Paul SOS 0702 540452.

CBM 64 Cassette, £30 of games. Joystick £180 ono. Tel: 01-743 3619.

DBN 64 for sale + 25 games (all original) + guide for playing Hobbit, APX, £160 with manuals + leads. Kapil 6-9pm Tel: 01-455 3185.

7 BLANK disks, C64 + manual. Offers. Tel: 01-455 3185

For Sale

FOR SALE Currah micro speech for the zx Spectrum vgc. £20 ovno with free game. P.Gower, 4 Clifford Crescent, Newport, Gwent.

ORIC 1 software for sale. Wimpey, M.A.R.C., Scuba, zorfons, 3D Battle, £2.50 each. Hobbit, £3.50, Lords of Time, £3.50. All for £18.00. Originals. Southampton (0703) 847168.

SHARP MZ80A As new 48k integral cassette and monitor. Games utilities and books £300. Any offer considered. Tel: Worthing (0903) 890370 after 6pm. Weekdays any time, weekends.

IDEAL Christmas Gift. Oric 1, 48, tape recorder, programmable joystick interface. Quickshot, 5 Oric owner mags, 6 books and over 25 games. Optional extra B/W TV. Costs over £320. Sell only £115 (TV) £25. Tel: 0243 787292.

2 ZX Microdrives £70. 8 microdrive cartridges £20. Unwanted gifts, brand new Amstrad MP1 £22. As new. Tel: 0698 822 744 (Blantyre).

ORIC 1 48k, tape recorder, 2 manuals, mags, all leads, £73 worth software, under guarantee... Excellent condition. As new, £95 ono. Tel: Leicester 766802 after 6.00am. Ask for Paul.

DMP 100 printer, 80 columns, hi-res graphics, Centronics RS232 interface (ideal for Interface 1), including RS232 cord + screen dump software + 100 sheets paper. Mint condition. New £300. sell £125 ono. Tel: 0272 684615.

TRS-80 model 100 24K Ram, including program recorder, 2 months old £450. Also video games system with unique built-in screen including 2 games £35. Tel: Brighton 695351.

SHARP MZ 700 64K Colour built-in printer, built-in tape recorder + manual + s/w £250. Tel: 303 501 (Notts).

EPSON HX20 + micro cassettes £300 one. Tel: Erdiston 384 (Worcs).

48K ORIC good condition £70 one. Tel: Jason Miller, Newmarket 750439

CASIOTONE MT70 electronic keyboard as new. Complete with bar-code reader and original packing. Offers around £120. Tel: 01-458 3995 after 6pm.

MICROS Peripherals CGP 115, 4 colour graphics printer/plotter, excellent condition, still boxed, only £550. Tel: 0344-866178 evens.

Wanted

WANTED SPECTRUM version 30 Hour Basic, Tape and/or book. Also other Learn Basic of machine code tapes. 79, Beaconsfield Rd, London N15 4SH. Phone: 01-800 6767 after 7pm.

SWAP my Vic-20 20K plus lots to software and loads of magazines for your CBM64. Software would be much appreciated but unnecessary. Ring Reigate 22136 after 5.00pm. for details.

WANTED ADVENTURE programs, assemblies and disassemblers for TRS 80 MIL II, good prices paid — contact Martin Ward, High Larches, Shire Lane, Farnborough, Kent BR6 7HH

WANTED White Lightning Swap for Hurd. Bournemouth 737532 after 5pm.

WANTED MICRODRIVES and interface 1. Will pay half recommended price. Will pay more for 2x Expansion system. Tel: 01-785 9332

SWAPORIC 1 48K for byte drive 500 or sell for £89 ono. with original packaging. (Owner has Atmos) tel: (048 67) Brookwood 3702 Surrey evenings/weekends

WANTED any version QL, swap for Oric Atmos, Dragon 32, Acorn, Atom, accessories for all, joysticks, books etc. Good condition. Value £500+. Also recorder. Tel: Crynant, 750952 and ask for Andrew.

WANTED SPECTRUM 48K. Working order up to £70 paid also peripherals considered. Phone: (051-424 5558 Daytime.

SWAP C64 — CM2 Cassette, all boxed, 4 year guarantee plus £100 of software for BBC + cassette. Will pay extra for disc. Tel Swindon 36570.

WANTED BBC B in exchange for 1, 48K Spectrum + Kayde Electronics Full size keyboard bar + printer. BBC type sound chip, thick stick joystick, £80 of s/w. Tel: 682 653 (Pool).

PENPAL or tape pal wanted with 16K or 48K Spectrum age not important but prefer adult male or female to exchange ideas prog, etc. I am beginner and require help. 041-762 0105.

SWAP SHARP PC1500 with printer, cassette interface software and tape recorder for music centre or stack unit. Tel: 0493 781958

YOUR LERM (MD 1) microdrive transfer tape (original with manual & examples) swap for one of my unused microdrive cartridges. Please ring Paul on Suckley (08864) 588 (Worcestershire).

WANTED: First copy of Crash Magazine: name your price and ring 01-348 3924. Ask for Graham.

WANTED ZX-48K Spectrum Plus real keyboard £100 cash plus P + P or £75 and £25 separate. No software. Write to address below: V. Elstrations, 48 Evangelistria St. 17971 Kallithea, Athens, Greece.

WANTED ROM cartridges for Sinclair, Spectrum (chess, Jet-Pac etc) write first with price please, Mr. J.F.C. Sellick, Garden Flat, 10 Gotham Gardens, Redland, Bristol BS6 6HD.

EXCHANGE Spectrum 48K Plus microdrive plus interface 1 plus s/w and manuals for Tandy TRS-80 model 1 or 3 48K plus VDU. Write C.R. Hottersall, Handling Flight, RAF Linton-on-Ouse, Yorks YO6 2AJ.

WANTED ZX printer to swap for Ant Attack, Morris Meets the Bikers, 3D Tanx, Micro Mouse, Sinclair Games 4 originals. Tel: (0287) 32561 (after 4pm on weekdays).

WANTED any Spectrum or CMB in working condition, for £20, for unemployed disabled, spare printer. Please quote price, unwanted games, as well Sony 41 Lowestoft Rd, Gorleston, Norfolk, NR31 6LZ.

ADVENTURE HELPLINE

Hobbit on Commodore 64. How do I get past the magic door in the Elvenking's halls? If there is a key, where is it? Robert Morris, c/o EO685892 F/S Morris, Sgts Mess, RAF Gatow, BFPO 45.

Twin Kingdom Valley on Commodore 64. I can't get the master key off the dragon because he burns me to death. Simon Hegarty, 15 Highfields, Hoylandswaine, Sheffield.

The Quest on Commodore 64. How to get out through the window in the observatory? HB Wishart, 'The Pear Tree', Sunderland Road, Kelling, Tyne and Wear, NE3 3LR.

Dallas Quest on Commodore 64. How do I go down the ladder in the trading post? P A Taylor, 167 Uplands Road, West Moors, Wimborne, Dorset.

Labyrinth on TRS80. I cannot get past the bear, man or gnome! Chris Enright, 364 Poynters Road, Luton, Beds LU4 0TW.

Urban Upstart on Spectrum. How do you fly the plane? I need help desperately. Mark Allan, 20 Holmergreen Road, Hazlemere, High Wycombe, Bucks, HP2 7BL (Tel: 716884).

Classic Adventure on Spectrum. I can only score 140 but I can't find any more locations. John Bladon, 15 Benson Avenue, Goldthorn Park, Wolverhampton, W Midlands.

Gateway to the Skyes on BBC. In part 1: how do I get the packaxe and how do I get the bones for the dog? Eric Tizioni, 51 Firwood Drive, Camberley, Surrey GU15 3QD.

Fantasia Diamond on Spectrum. I can't manage to cross the river. What does 'wait for it' mean? Darren Parkinson, 45 Dryden Avenue, Bryn, nr Wigan, Lancs.

Castle of Riddles on BBC. I have found 11 treasures but I cannot take the ring without being killed. How do I get the ring? Jan Wiffill, 18 Auckland Road, Ford, Plymouth, Devon PL2 3BX.

Pyramid of Doom on BBC. Where is the tiny door? How do you get inside the pyramid? David Yick, 5 Ryburn Buildings, Sowerby Bridge, nr Halifax, West Yorks HX6 3AH.

Magic Mountain on Spectrum. I can't get through the maze. Could someone give me directions please. Katy Proctor, 23 Linnell Road, Rugby, Warwickshire.

Hobbit on Spectrum. What do I do after opening the window in the goblin's dungeon? D A Hollis, 3 Aldbourne Road, Burnham, Bucks SL1 7NJ.

The Count on Vic20. How do I get into the vents? What do I do when I find the coffin? How do I find the crypt? Andrew Kingman, 6 Falowfield, Leighton Buzzard, Beds LU7 8PW

- Vic 20**
- (10) Perils of Willy (Software Projects)
 - (3) Duck Shoot (Mastertronic)
 - (2) PUNCHY (Mr Micro)
 - (-) 3D Maze (Mastertronic)
 - (5) Sub Commander (Thorn EMI)
 - (8) Snooker (Visions)
 - (3) Computer War (Thorn EMI)
 - (4) Max (Amurog)
 - (9) Space Scramble (Mastertronic)
 - (-) Flight 015 (Craig Communications)
- (Figures supplied by Boots/Websters)

- Commodore 64**
- (-) Ghostbusters (Activision)
 - Raid over Moscow (US Gold)
 - Chiller (Mastertronic)
 - PSI Warrior (Beyond)
 - D. Thomson's Decathlon (Ocean)
 - International Soccer (CBM)
 - Falcon Patrol II (Virgin)
 - Zaxxon (Centrossoft)
 - Jet Set Willy (Software Projects)
 - BMX Racers (Mastertronic)
 - Beach Head (Centrossoft)
- (Two titles tie for 10th position)
(Figures supplied by Boots/Websters)

- Spectrum**
- (-) Knight Lore (Ultimate)
 - (-) Pole Position (Atari)
 - (1) Daley Thomson's Decathlon (Ocean)
 - (2) Beach Head (Centrossoft)
 - (6) Tornado Low Level (Vortex)
 - (-) Backpackers Guide to Universe (Fantasy)
 - (-) Rhymes of Zandos (Dorcas)
 - (-) Strange Loop (Virgin)
 - (-) Full Throttle (Micromega)
 - (-) Jet Set Willy (Software Projects)
- (Figures supplied by Boots/Websters)

- Dragon 32**
- (1) Hunchback (Ocean)
 - (2) Hungry Horace (Melbourne House)
 - (8) Dragon Chess (Ocean Software)
 - (3) Mystery of Java Star (Shards)
 - (4) Chackie Egg (A&F)
 - (6) Mr Dig (Microdeal)
 - (5) Gunbert in Space (Microdeal)
 - (7) Krieggspiel (Beyond)
 - (10) Bug Driver (Mastertronic)
 - (-) Sprite Magic (Knight Software)
- (Figures supplied by Boots/Websters)

- BBC**
- Scrabble (Leisure Genius)
 - Elite (Acorn)
 - Football Manager (Addictive)
 - Swag (Micro Power)
 - Mini Office (Database)
 - Mr EE (Micro Power)
 - Pearl Harbour (MGame Simulations)
 - Elite (Disc) (Acorn)
 - Challenger (Mastertronic)
 - Return to Eden (Level 9)
- (Figures supplied by Boots/Websters)

- Atari**
- (9) Encounter (Hi Tech)
 - (1) Attack of Mutant Carnels (Llamasoft)
 - (3) Zaxxon (Centrossoft)
 - (8) Gridrunner (Llamasoft)
 - (10) Slinky (Centrossoft)
 - (6) Carnival Massacre (Atari)
 - (2) Computer War (Atari)
 - (5) Tank Commander (Thorn EMI)
 - (7) Leggit (Imagine)
 - (4) Sub Commander (Thorn EMI)
- (Figures supplied by Boots/Websters)

- Amstrad**
- (1) Harrier Attack (Durrell)
 - (-) Choula (Micropower)
 - (-) Word Processor (Amstrad)
 - (5) Star Commando (Terminal)
 - (-) Forest at World's End (Intercept)
 - (2) Code Name Matt (Micromega)
 - (-) Return to Eden (Level 9)
 - (4) Roland in the Cave (Amsoft)
 - (-) Monster Chase (Bionic)
 - (3) Chess (Amsoft)
- (Figures supplied by Boots/Websters)

Readers' Chart No 1

- | | | |
|----|--|----------------|
| 1 | Daley Thomson's Decathlon (<i>Spectrum/C64</i>) | Ocean |
| 2 | Danger Mouse in Double Trouble (<i>Spectrum/C64</i>) | Creative Parks |
| 3 | Elite (<i>BBC/Electron</i>) | Acornsoft |
| 4 | Underwulde (<i>Spectrum</i>) | Ultimate |
| 5 | Pyjamarama (<i>Spectrum/C64/Amstrad</i>) | Micro-Gen |
| 6 | Beachhead (<i>C64</i>) | US Gold |
| 7 | Tir Na Nog (<i>Spectrum</i>) | Gargoyale |
| 8 | Deus ex Machina (<i>Spectrum</i>) | Automata |
| 9 | Eureka (<i>Spectrum/C64</i>) | Domark |
| 10 | Lords of Midnight (<i>Spectrum/C64</i>) | Beyond |

Week 1: No winner — £50 added to Week 3 chart fund

Now voting on Week 3

Each week Popular is compiling its own special software top ten chart — compiled by YOU.

All you have to do to vote is to fill in the form below with ten names of your current three favourite software titles (or copy the form onto another sheet if you don't want to damage your magazine) and send it off as soon as possible to: Top 10, Popular Computing Weekly, 12-13 Little Newport Street, London WC2H 7PP.

We will send £50 each week to the person who correctly predicts that week's top three. If there is no winner then that week's prize is automatically added to the chart on which voting is currently taking place, and so on until someone gets it right! (If there is more than one winner that week's prize — whatever the 'pot' stands at — will be split equally between all the correct entries.)

Voting for Week 3 closes at 2pm on Wednesday December 5. Entries received after that time will not be eligible for inclusion in that week's voting.

Name.....	My top 3: Voting Week 3
Address	1
.....	2
.....	3

Diary

Event	Dates	Venue	Admission	Organisers
Electron and BBC Micro User Show	Dec 6-8 10.00am-5.00pm Dec 9 10.00am-4.00pm	New Horticultural Halls London SW1	£3.00 adults £2.00 children	Database Publications 061-466 8383
Which Computer? Show (over 16s only)	Jan 15-17 (1985) 10.00am-5.00pm Jan 18 10.00am-4.00pm	NEC Birmingham	Free in advance from organisers	Clapp and Polak 01-591 9061
Hi-Technology and Computers in Education Exhibition	Trade: Jan 24 10.00am-1.00pm Educationalists: Jan 24 1.00pm-8.00pm Jan 25 11.00am-8.00pm Public: Jan 26 11.00am-6.00pm	Barbican London EC2	Free in advance from organisers	Computer Marketplace 01-930 1612

New Releases

MAGIC STONE

Along with some cassette versions of previously disc-based games like *Alice in Videoland*, Audiogenic have released *Magic Stone*, an adventure with, it says, 'graphics, sprites, music and sound'.

The aim of the adventure is to find a magic stone — secret key to alchemy — and a book of experimental notes by Von Schwarzerzen which tells you what to do with it. Aiding you is a mystic amulet which turns different colours when magic is around.

The graphics are fairly simple and occupy only about a sixth of the screen; nevertheless, the idea of graphics that change according to your choices is definitely one of the directions we are moving in. Of the quality of the adventure as an adventure I can say little except that I got stuck after about seven moves and it only understands a fairly simple vocabulary.

Still, I suspect it could get pretty addictive and it is a little different from the norm.

Program *Magic Stone*
Price £5.95
Micro Commodore 64
Supplier Audiogenic, 39 Suttons Industrial Park, London Park, Reading, Berkshire RG6 1AZ

DISASTER

Havoc on the Commodore was one of the best programs released recently for the machine.

Now the program has been issued for the Spectrum and it is a massively inferior game.

The smooth 'diagonal' scroll of the CBM version has become a jumpy, jerking mess and in only two colours.

The game is also easier to play than the Commodore version which would be an advantage, perhaps, had one any inclination to play it. But the whole thing is such a disaster I'm surprised Dynavision bothered to release it — especially given the reputation it had built with the original. One last point, the packaging uses photos from the CBM version — OK, this fact is pointed out, but it's still highly misleading to anyone taking a quick glance. Avoid completely.

Program *Havoc*
Price £7.95
Micro Spectrum
Supplier Dynavision Producing Studio
PO Box 96
Luton
LU5 2JP

STREETWISE

What could be more streetwise, outdoorsy, energetic and physical than breakdancing? — the very antithesis of all things computer-rescue you might think but no — now you can breakdance on the computer. This does not mean dancing about on top of it and smashing it to bits. *Breakdance* is a computer program for the Commodore 64.

Actually for the most part what you get are various games



based around dancing, although one option is to create your own dance. Inevitably much of the program involves the Commodore 64 making scratch record impersonations, quite funky really, and only spoiled by my having heard the *Ghostbusters* music on the same machine which easily outclasses it.

The little figures boogie quite neatly and games include a *Simon* variant in which you have to match the movements of a dance, another has you trying to perform backspin and suicide moves. I'd have thought that breakdancers wouldn't want to play a computer game and vice versa.

Program *Breakdance*
Price £18.95
Micro Commodore 64
Supplier Ashbrook House
3-5 Rathbone Place
London W1

ANCIENT ART

Ghoulies is a Quilled (bets — I didn't actually find a reference though) adventure with many excellent touches not least

being the way the text is enlivened with small illustrations, large capitals, etc, like some ancient manuscript.

Ghoulies is actually a pretty gloomy and gothic adventure — one of the first things you'll discover is a corpse swinging on a gibbet. The plot concerns ancient arts, alchemy, secret documents and dead sinners.

What I like about the program is that though it has all the usual adventure touches of magic, clues, secrets, and ancient mysteries, its atmosphere is quite different from the norm. The gothic touches and horrible scenes give the adventure a dark hue like something by Bosch. X rated horror for hard core adventurers. A little gem.

Program *Ghoulies*
Price £8.00
Micro Spectrum
Supplier IMS Software, 143-145 Uxbridge Road, London W13 9AV



This Week

Program	Type	Micro	Price	Supplier	Program	Type	Micro	Price	Supplier
Frogger 2	Arc	Atari	£9.95	Silica	Quinx	Arc	Commodore 64	£6.95	Supersoft
Gyruss	Arc	Atari	£9.95	Silica	Spectipede	Arc	Commodore 64	£1.99	Mastertronic
Star Wars	Arc	Atari	£9.95	Silica	Squirm	Arc	Commodore 64	£1.99	Mastertronic
Marine Wars	S	Atari	£6.95	Silica	Starace	Arc	Commodore 64	£1.99	Mastertronic
Pooyan	S	Atari	£9.95	Silica	Alien	S	Commodore 64	£6.99	ASP
Strategy X	S	Atari	£6.95	Silica	The Pencil	Ut	Commodore 64	£11.99	Activision
Pole Position	Arc	BBC	£9.99	Atari	Tutor	Ed	QL	£20	Snowsoft
Robotron	Arc	BBC	£9.99	Atari	M/C Sprite Designer	Ut	QL	£15	Snowsoft
Hektik	Arc	Commodore 64	£1.99	Mastertronic	Se-Kaa of Assiah	Ad	Spectrum	£2.99	Mastertronic
Jungle Story	Arc	Commodore 64	£1.99	Mastertronic	The Witch's Cauldron	Ad	Spectrum	£6.95	Mikro-Gen
Mutant Monty	Arc	Commodore 64	£6.95	Artic	Doomdark's Revenge	Ad	Spectrum	£9.95	Beyond

STOCK LEVEL

There are several big problems with using your Spectrum for serious business purposes, but one way or another all can be overcome. Problems like keyboard and slowness of tape can be surpassed by buying an add-on and micro drives. Centronics interfaces can be purchased for print outs. The problem is there are few business programs that support micro drives (though the number are growing) let alone drive the various different Centronics interfaces.

+80 Stock Manager not only drives nearly any interface you can think of, it outputs in 80 columns — just like 'real' programs and supports micro-drives.

About Stock Manager programs in general there isn't much to say — you can keep a record of all products stocked and view increases and decreases, minimum stock levels,

produce invoices with appropriate Vat codes, etc. A small, but well written manual explains the basic functions and how to customise the program for your own particular interface, etc. The results are printed out in 80 columns and look most impressive. A useful program.

Program +80 Stock Manager
Price £19.95
Micro Spectrum
Supplier Oxford Computer
 Publishing Brimrod 4a
 High Street, Chalfont St
 Peter, Buckinghamshire
 SL9 9QB

SECRET RUNE

Sometime last year, around a month or so before *Valhalla* was finally issued, Dorcas issued a program called *Oracles Cave* which featured an animated man who walked around, climbed ropes, fought baddies and hunted for treasures, in some ways the first animated graphics adventure.

Dorcas has now released a sequel to *Oracles Cave* entitled *The Runes of Zandos* which features the same general layout and a similar, although smaller, character.

The plot is complex and has been deliberately designed to function on different levels — on one it is a bash it out dungeons and dragons variant, on another it has a text adventure in which amongst other things you try to discover the meaning of various secret runes.

Here's the plot. The year has



This Week

Galaxian	Arc	Spectrum	£7.99	Atari
Ms Pac Man	Arc	Spectrum	£7.99	Atari
Pole Position	Arc	Spectrum	£7.99	Atari
Bodyswap	Ed	Spectrum	£7.95	Sinclair
Disease Dodgers	Ed	Spectrum	£7.95	Sinclair
Estimator Racer	Ed	Spectrum	£4.95	Sinclair
MacMan + Caber Eater	Ed	Spectrum	£7.95	Sinclair
MacMan + GI Escape	Ed	Spectrum	£7.95	Sinclair
MacMan's Magic Mirror	Ed	Spectrum	£7.95	Sinclair
Number Painter	Ed	Spectrum	£4.95	Sinclair
Oil Strike	Ed	Spectrum	£7.95	Sinclair
Planet Patrol	Ed	Spectrum	£7.95	Sinclair



Grown men weep for joy, children wave flags, white doves and coloured balloons are flung into the air. *Doomdark's Revenge* has arrived. To describe *Doomdark* as long awaited is actually to make a mistake, not about enthusiasm but rather about time. All things considered, this is a sequel that has followed reasonably closely the original triumph of *Lords of Midnight*. At least when you contrast it with the year or more between, say, *Jet Set Willy* and *Manic Miner* or *Great Space Race* and *Valhalla*.

The basic look of *Doomdark* is the same as *Lords of Midnight*, but in many ways there is a different 'feel' to the game which makes playing the game a new and different experience. Apart from anything else, *Doomdark* is a more sophisticated and more difficult game.

A number of extra commands and features have been added to the game. *Check Place* gives information about the current location, *Check Battle* tells you how a battle went, *Check Army* tells you how many men you command. A new feature is mist which moves across the

been trapped — the spirit of each month is hidden in 12 Runic Hour Glasses which are scattered deep within a magical castle. You must find each glass and attempt to decipher the runes around it.

Top half on the screen shows

GOODIES AND BADDIES

landscape and makes the going difficult — location pictures actually change over time as the mist moves. Mike Singleton has also produced the effect of three colours out of two by using thin lines alternating the two main colours — this



cunning effect can, for example, produce a kind of orange from yellow and red.

Doomdark is set in the icy waters to the north of the land of midnight. Morkin, affable hero, has been captured by the evil Shareth the heartstealer — a sort of cosmic Joan Collins. Morkin's true love, Tarihel the Fey, no wimp, wanders north in

the action — the little man who walks, runs, fights and climbs. The bottom is for you to input your sentence and for other information. There are a lot of options within the game including saving to microdrive. The 12 glasses from 12 connected,

Soundabout	Ed	Spectrum	£7.95	Sinclair
Spellbox	Ed	Spectrum	£7.95	Sinclair
Weathermaster	Ed	Spectrum	£7.95	Sinclair
Wordsetter	Ed	Spectrum	£7.95	Sinclair
Stargazer	UI	Spectrum	£7.45	Eclipse
Match Day	S	Spectrum	£7.95	Ocean
Alphabetter	Ed	Spectrum	£7.95	Sinclair
Adventure	Ad	ZX81	£3.20	Gavin Barker
Derby Day	S	ZX81	£1.29	R. J. Ratcliffe
Euro Airways	S	ZX81	£2.80	Gavin Barker
Racehorse Trainer	S	ZX81	£2.80	Gavin Barker
Stock Market	S	ZX81	£2.80	Gavin Barker

search of him on a solitary journey through the mountains. Luxor the Moonprince and Rothron the Wise (a Gandalf clone) supported by a mere 1,000 riders go through the ice gates in a direct assault...

From the computer keyboard, you control the movements of all three characters, Luxor, Rothron and Tarithel, as well as anybody else they've been able to recruit. There are thousands of locations, secret treasures and passage ways and countless goodies and baddies to be met.

Unlike *Midnight*, where there are adventure and strategy quests, here there is only the one way of playing the game — all characters have to move if you are to win and in its totality the game mixes adventure and strategy in about even portions.

The two or three days I've had it is nowhere near enough for deep analysis of the game — that'll follow in the following months — but with its added complexity and detail I think it could prove to be even more gripping than *Midnight*. Don't buy this one at Christmas if you are going to be expected to chat to your relatives.

Program *Doomdark's Revenge*
Price £9.95
Micro Spectrum
Supplier *Beyond, Lector Court, 151 Farringdon Road, London EC1R 3AD*

but separately playable, adventures, and you can switch to other adventures at any time during any game.

Graphically it's fair, but not to be compared with the likes of *Tir Na Nog*; nevertheless it's tremendously playable and

should take ages to solve completely.

Program *The Runes of Zandos*
Price £7.95
Micro Spectrum
Supplier *Dorcas 3 The Oasis, Glenfield Leicester*

BREAK-IN

Blogger, one of the best-selling programs on the Commodore 64, has now been translated for the Amstrad. For those who do not know the game it was perhaps the first *Manic Miner* rip-off, although done sufficiently well to become quite a classic in its own right.

Roger the Dodger, a house breaker, has to find his way through a house collecting golden keys. Unavoidably, collecting the keys is no easy matter; some require seemingly impossible leaps, others seem guarded by unavoidable nasties of various sorts.

The blurb for the game describes it as having stereo sound effects. I suppose this means



the wheeeeeeeeee you get when your little man makes an ill-calculated leap. Amstrad owners aren't as surfeited with *Manic Miner* style games as owners of other machines and this is one of the best. The quality of the conversion from the Commodore 64 is fair, but I suspect we have yet to see what the Amstrad is capable of when pushed to the kind of limits as recent Spectrum games.

Program *Amstrad*
Price £7.95
Micro Amstrad
Supplier *Alligata, 1 Orange Street, Sheffield S1 4DW*

SUBLIME

Cliffhanger is one of the very few games New Generation have produced for the Commodore 64. It's a game you'll either find irritating or sublime, depending on how you feel about roadrunner cartoons.

Personally, I love roadrunner cartoons. The effortless way fate conspires to protect the bird from the efforts of the coyote's ever more devious and Machiavellian plots and the seeming obliviousness of the rather daft looking bird to all that takes place never fails to produce fits of rib-aching mirth.

Cliffhanger replaces the coyote with a silly looking man and the roadrunner with a bandit. There are various screens in all of which the simple objective is to drop a rock on or otherwise blow up the bandit.

In some screens there are seesaws where you drop a



rock on one end and another rock is shot through the air, in others technology is introduced in the form of a giant cannon. In all screens the structure is the same. You stand high on a rocky outcrop above a desert landscape, the bandit comes from the far distance to the front of the screen — you have to time your assault carefully.

The success of the game lies in the small touches — if you accidentally walk off a cliff you plummet to earth out of sight with the authentic pewwwwwwwweeeeeeeeeeeeeeeeeesch sound featured in the cartoons.

You might find the simple plot insufficient to retain your interest. Personally, I can watch it for hours. Good fun for the kids at Christmas, I should think.

Program *Cliffhanger*
Price £7.95
Micro Commodore 64
Supplier *New Generation, The Brooklands, 15 Sunnybank, Lyncombe*

Addresses

ASP, No 1 Golden Square, London W1R 3AB, 01-437 0626.
Activision, 15 Harley House, Marylebone Road, London NW1.
01-486 7588 **Artic**, Main Street, Brandesburton, Driffield YO25 8RI, 0401 43553. **Atari**, Atari House, Railway Terrace, Slough, Berkshire 0753 33344. **Beyond**, Lector Court, 153 Farringdon Road, London EC1R 3AD 01-837 2899. **Eclipse**, 79 Ardrossen Gardens, Worcester Park, Surrey KT4 7AX 01-330 3116. **Gavin Barker**, 12 Fleming Field, Shotton Colliery, County Durham DH6 2JF 0783 261405. **Mastertronic**, Park Lorne, 111 Park Road, London NW8 7JL 01-402 3316. **Mikro-Gen**, 44 The Broadway, Bracknell 0344 427317. **Ocean**, 6 Central Street, Manchester M2

5NS 061-832 6633. **R. J. Ratcliffe**, 40 Merok Park, Belfast BT6 9LT. **Silica**, 1-4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX. 01-309 1111. **Sinclair**, Stanhope Road, Camberley, Surrey GU15 3PS. 0276 686100. **Snowsoft**, 6 Bousfield Crescent, Newton Aycliffe, Co Durham DL5 5HZ. **Supersoft**, Winchester House, Canning Road, Wealdstone, Harrow, Middlesex HA3 7SJ. 01-861 1166.

This Week is a new section that covers all the new software coming on to the home micro market each week. All suppliers should send details of their new programs to: This Week, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

This Week



BARDIC LOGIC

When Macbeth, the Thane of Cawdor as he then was, went to the Hecate Computer Bureau for the calculation of future projections for his business plan, he seems to have obtained good value on the whole.

Although the event took place many centuries ago Shakespeare, as always, brings out the timeless quality and nature of human experience in his description of the incident.

Thus he tells us of the initial proposal for a demonstration to the client:

'When shall we three meet again?
And of a problem of decision-making and authority within the organisation, Hecate, who clearly occupies a senior management position, complains of being left out of the presentation — 'How did you dare to trade and traffic with Macbeth ... and I ... was never called to bear my part or show the glory of our art?'

However, this problem is resolved and Hecate outlines special arrangements for some kind of bonus or commission for the operators: '... I commend your pains, And everyone shall share 'the gains'. The presentation then takes place in 'a dark cave' — a venue obviously chosen for its constant ambient temperature of around 10°C, ruling out the necessity for expenditure on temperature control or air conditioning, and as a suitable background for the 3D visual displays that the computer can produce.

The scene then continues rather oddly: Macbeth: 'How now, ye secret, black and midnight hags! What is't you do?'
All: 'A deed without a name.'

Nowadays, of course, it is customary to give

computer systems and programs names, to distinguish one from another and to establish ownership and copyright, particularly with a view to licensing or franchising the material. However, the situation we are dealing with here where the program itself is not to be made available to the client; we do in fact hear the names of the modules of the system, such as Toad, Newt and Dragon, when they are being loaded in binary form ('Double, double, toil and trouble ...') but these are never mentioned in Macbeth's presence.

This reasoning may not be altogether correct, however. Macbeth's reference to secrecy may indicate that he has been made to sign some kind of confidentiality agreement, indicating possible access to the source software. There could hardly be any objection to his reporting the impressive, not to say spectacular, nature of the output from the system to other potential clients. In particular the 3D graphics produced (holography?) indicate a technology to some extent in advance even of the present-day state of the art.

Macbeth is given the choice of having a report from the operators or interrogating the computer himself — 'Say, if thou'dst rather hear it from our mouths, or from our masters?') He chooses the second alternative and this reveals that the system is not only interactive but accepts input by telepathy — Macbeth starts to ask a verbal question but is interrupted by one of the operators who tells him 'He knows thy thought — Hear his speech, but say thou naught'. This confirms again the high level of sophistication reached by ancient computer technology.

In the final scene of the play, Macbeth, King of Scotland as he then (predictably) was, complains that he has been misled by the output; he expresses a certain dissatisfaction with the service provided, deriving in particular, it seems, from the comments about 'Birnam Wood' and 'man of woman born'.

'I begin' he says 'to doubt the equivocation of the fiend that lies like truth', and '... be these juggling fiends no more believed ... that keep the word of promise to our ear, and break it to our hope.'

However, it is easy enough to blame the computer when things go wrong, and if Macbeth chooses to interpret the output provided without reference to his own general knowledge about forestry and Caearian section, it is probably because that is how he wants to interpret it.

Gwyn Mellish

Getting in training

Puzzle No 135

Eric has just spent a day sightseeing in London. His return rail fare cost him just one fifth of the money he had, and then he spent an extra 60 pence on newspapers to read on the train.

On arriving, he bought lunch which cost him a quarter of what he then had, before a quick tour of the sights costing just three pounds in fares.

Before leaving for home, he spent a third of what remained on souvenirs, and a further seventy pence on sandwiches for the journey back.

Whilst on the train he noticed that he had as many pounds as he originally had pence, and as many pence as he originally had pounds. Also no transaction involved half-pennies.

How much did he set out with?

Solution to Puzzle No 13.

- i) $7 * (7 * 3 * 5) = 735$
ii) $8 * (1 * 2 * 8) = 128$ or $5 * (1 * 7 * 5) = 175$ or $4 * (3 * 8 * 4) = 384$

The program assigns values to P, C and W and checks to see if the expression equalises. In the program given, the first of the two alphabets is being checked. To solve the second, amend Line 40 to: $40 T = W * (P * C * W)$.

10 FOR P = 1 TO 9 20 FOR C = 1 TO 9 30 FOR W = 1 TO 9 40 LET T = P * (P * C * W) 50 IF T = P * 100 + C * 10 + W THEN PRINT P; C; W 60 NEXT W 70 NEXT C 80 NEXT P
NB Clearly, none of the values of P, C, or W can equal zero.

Winner of Puzzle No 130

The winner is D Tiley of Park Lane, Cottingham, N Humberside, HU16 5RX, who receives £10 pounds.

Rules

If the puzzle can be sensibly solved using a computer, then the winner have included a listing of the program used to find the correct answer. The closing date for Puzzle 135 is December 14.

The Hackers



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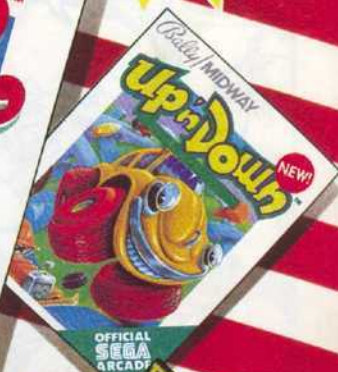
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For release schedule and trade details contact:
Centre Soft, Unit 10, The Parkway Industrial Centre, Henegate Street, Birmingham B7 4LY. Telephone: 021-359 3020. Telex: 337268.

LADY CLAIR HAS HAD A VISIT FROM A SINGING GORILLA, AND AUTOMATA UK LTD HAVE HAD A VISIT FROM THE VATMAN. THEY MUST RETURN TO PILAND TO SORT IT ALL OUT. CLAIR IS EATING SOME VERY FUNNY THINGS INDEED.

Greenish Events H5SFAUCHUAUEAUCH H5SRAAUA-UAH-UAEUAUGH
Featuring STARTEK MOTOR MOVIES



OH, COME ON, MORRIS. I THOUGHT YOU SAID YOU FIXED HIM, PIMAN!

LOOKS LIKE HE DID! FOR KEES!

SHUTTUP! SHUTTUP SHUT SHUT UP!

IT'S NO GOOD! I CAN'T MAKE HIM GO!

TRIED PUTTING ALL-BRAN IN THE TANK?

VERY FUNNY! LOOK, WE'LL HAVE TO HAVE SOME TRANSPORT... FOR CLAIR, YOU SEE...



CAN YOU MANAGE TO LIFT THAT HEAVY PHONE?

DON'T BE SARKY, YOU... OH, YAKZEE YAK? HI! LISTEN, WE NEED HELP.



I WASN'T BEING SARCASTIC, CLAIR... YOU MUST BE VERY CAREFUL WITH A LITTLE TAX EXEMPTION ARRIVING.

OH ALL RIGHT



SHUFFLE OFF, YOU LOT - I DON'T SEE WHY YOU ALL HAVE TO TAG ALONG! IT'S MY FLIPPA TAX EXEMPTION!

AYE, WELL, WE'LL SEE ABOUT THAT! FANCY A NICE WAGOR O' COAL, LASS?

HA! THAT'LL BE YAKZEE!

TA

PILAND SPECIAL

TA

TA



HARRO! I CAME TO OFFER MY UNWORTHY BACK TO MAKE RADY CRAIR'S JOURNEY TO PILAND MORE COMFORTABLE!

GREET!

HA! ALSO BRING AUTOMATA'S GAME OF RUCK & SKIRK, "YAKZEE" TO BRAY ON JOURNEY!



GOODO! HELP US UP, CROUCHER - I'LL UNZIP THIS INTERDIMENSIONAL FLY-OVER!

WHEEEEE! SUCH EXPRESSIVE USE OF COLOUR FROM OLD EVANS TODAY!



AND SO THEY BEGIN THEIR JOURNEY ACROSS THE DESERT OF LOST IDEAS, TO THE GATES OF PILAND.

PILAND. NO NICKERS!

OH AH COOM FROM TRINIDAD WID MAH SHTEROGRAM ON ME ARM IT'SH POWERED BA DE DYNAMO IN MAH LEFF SHIKATE COSH DE BATTERIES AIN DOWN ON PE FARM!

It really gets worse every week! How can I punish my little girl for eating crayons and coal when Lady Clair is depicted doing so on your page? Yavs, Veronica Angrillie.

Dear Veng, We know your "little girl" happens to be 34! Isn't it time she was hitched? Automata.



OH! GREAT, THANKS - HAD LOADS OF COVERAGE ON BBC1'S 'SATURDAY SUPERSTORE' AND 'THE CUP SHOP ON RADIOS 1 AND 4...

AND THE LBC BROADCAST AT ALLY PALLY THE OTHER WEEK - AND AN ARTICLE IN THE SUNDAY TIMES COLOUR SUPPLEMENT THIS WEEKEND!



ONE MAG DID GIVE IT A BIT OF A GROTTY REVIEW... 'CLICK MEMBERS MONTHLY' OR SOMETHING.

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THE BEST STEREO MUSICAL EXTRAVAGANZA WE HAVE EVER PRODUCED SINCE CLOSING TIME!

- ONLY £3 - OR £4 WITH THE PIMAN'S 1985 CALENDAR

ALL DOUGH AND ORDERS TO: AUTOMATA U.K. LTD 27 HIGHLAND ROAD SOUTHSEA, HANTS PO4 9DA TEL: (0705) 735242. DON'T BE LEFT OUT!



THE FACE IS COOVERED IN COAL DOOST, LASS!

NO, I'VE BEEN EATING A MA'S BAR. IT MUST BE CHOCOLATE!

HEE HEE! THAT MAKES YOU A CHOCOLATEY CLAIR!



LOOK YOU GUYS! THE GATE OF PII!

WOW! IT'S AWESOME! IT BUTZES MY DITS! IT REFRESHES MY SENSE OF PURPOSE IN LIFE! IT'S BEAUTIFUL! IT'S ETERNAL... IT'S...

...IT'S HALF SIX! WE'VE MISSED STAR TREK!

PILAND WELCOME CAREFUL YAKS

OH, POO!!

